

Chapter 1: Ratio and Proportion, Indices, Logarithms Analysis

1.	The inverse ratio of 11: 15 is (a) 15:11 (b) $\sqrt{11} : \sqrt{15}$ (c) $1^2 1 : 225$ (d) none of these Ans (A)
2.	The ratio of two quantities is 3: 4. If the antecedent is 15, the consequent is (a) 16 (b) 60 (c) 22 (d) 20 Ans. (D)
3.	The ratio of the quantities is 5: 7. If the consequent of its inverse ratio is 5, the antecedent is (a) 5 (b) $\sqrt{5}$ (c) 7 (d) None of these Ans.(C)
4.	The ratio compounded of 2:3, 9: 4,5: 6 and 8: 10 is (a) 1:1 (b) 1:5 (c) 3:8 (d) none of these Ans.(A) [SM, MTP May 19]
5.	The duplicate ratio of 3: 4 is (a) $\sqrt{3}:2$ (b) 4:3 (c) 9:16 (d) none of these Ans. (C)
6.	The sub-duplicate ratio of 25: 36 is (a) 6:5 (b) 36:25 (c) 50:72

	(d) 5:6 Ans (D)
7.	The triplicate ratio of 2: 3 is (a) 8:27 (b) 6:9 (c) 3:2 (d) none of these Ans: (A)
8.	The sub-triplicate ratio of 8: 27 is (a) 27:8 (b) 24:81 (c) 2:3 (d) none of these Ans C [SM, MTP May 19]
9.	The ratio compounded of 4: 9 and the duplicate ratio of 3: 4 is (a) 1:4 (b) 1:3 (c) 3:1 (d) none of these Ans. A
10.	The ratio compounded of 4:9 ,the duplicate ratio of 3:4 ,the triplicate ratio of 2:3 and 9:7 is a. 2:7 b. 7:2 c. 2:21 d. None of these Ans :-C
11.	The ratio compounded 4:5 ,9:7, the triplicate ratio of 3:4 and the triplicate ratio of 2:3 is :- (a) 4:512 (b) 3:32 (c) 1:12 (d) none of these Ans :-D
12.	If a:b 3: 4, the value of $(2a+3b) : (3a+4b)$ is

	(a) 54:2 (b) 8:25 (c) 17:24 (d) 18:25 Ans D [SM, MTP Jan 25, May 20]
13.	Two numbers are in the ratio 2: 3. If 4 be subtracted from each, they are in the ratio 3: 5. The numbers are (a) (16,24) (b) (4,6) (c) (2,3) (d) None of these Ans. A
14.	The angles of a triangle are in ratio 2: 7:11. The angles are a) (20°, 70°, 90°) b) (30°, 70°, 80°) c) (18°, 63°, 99°) d) none of these Ans :-C
15.	Division of Rs. 324 between X and Y is in the ratio 11:7. X & Y would get Rupees a) (204,120) b) (200,124) c) (180,144) d) none of these Ans :- D
16.	Anand earns Rs.80 in 7 hours and Promod Rs.90 in 12 hours. The ratio of their earnings is (a) 32:21 (b) 23:12 (c) 8:9 (d) none of these Ans :- A
17.	The ratio of two numbers is 7: 10 and their difference is 105. The numbers are (a) (200,305) (b) (185,290) (c) (245,350) (d) none of these Ans :-C
18.	P, Q and Rare three cities. The ratio of average temperature between P and Q is 11: 12 and that between P and R is 9:8. The ratio

	between the average temperature of Qand Ris (a) 22:27 (b) 27:22 (c) 32:33 (d) none of these Ans :-B [SM, MTP May 18, June 24]
19.	If $x:y = 3:4$, the value of $x^2y + xy^2 : x^3 + y^3$ is (a) 13:12 (b) 12:13 (c) 21:31 (d) none of these Ans :-B [SM, MTP Nov 23]
20.	If $p:q$ is the sub-duplicate ratio of $p - x^2 : q - x^2$ then x^2 is (a) $\frac{p}{p+q}$ (b) $\frac{q}{p+q}$ (c) $\frac{pq}{p+q}$ (d) none of these Ans :-C
21.	If $2s: 3t$ is the duplicate ratio of $2s - p: 3t - p$ then (a) $p^2 = 6st$ (b) $p = 6st$ (c) $2p = 3st$ (d) none of these Ans :-A
22.	If $p:q = 2/3$: and $x : y = 4:5$ then the value of $5px + 3 3qy : 10 px + 4qy$ is (a) 71:82 (b) 27:28 (c) 17:28 (d) none of these Ans :-C
23.	The number which when subtracted from each of the terms of the ratio 19:31 reducing it to 1:4 is (a) 15 (b) 5 (c) 1 (d) none of these Ans :- A
24.	Daily earnings of two persons are in the ratio 4:5 and their daily expenses are in the ratio

	7:9. If each saves Rs 50 per day, their daily earnings in Rs are (a) (40,50) (b) (50,40) (c) (400,500) (d) none of these Ans :- C [SM, MTP June 23]
25.	The ratio between the speeds of two trains is 7: 8. If the second train runs 400 kms. in 5 hours, the speed of the first train is (a) 10 km/hour (b) 50km/hour (c) 70km/hour (d) none of these Ans :- C
26.	If $x:y:z = 2: 3:5$ if $x+ y+ z = 60$,then the value of z (a) 30 (b) 15 (c) 9 (d) 12 Ans : (a) [MTP May 19]
27.	The ratio of two numbers is 15: 19. If a

	certain number is added to each term of the ratio it become 8:9. What is the number added to each of the ratio? (a) 6 (b) 15 (c) 17 (d) 23 Ans : (c) [MTP May 19]

Exercise 1(B)

1.	The fourth proportional to 4, 6, 8 is (a) 12 (b) 32 (c) 48 (d) none of these Ans :- A
2.	The third proportional to 12, 18 is (a) 24 (b) 27 (c) 36 (d) none of these Ans :- B
3.	The mean proportional between 25, 81 is (a) 40 (b) 50 (c) 45 (d) none of these Ans :- C
4.	The number which has the same ratio to 26 that 6 has to 13 is (a) 11

	(b) 10 (c) 21 (d) none of these Ans :- D
5.	The fourth proportional to $2a, a^2, c$ is (a) $ac/2$ (b) ac (c) $2/ac$ (d) none of these Ans :-A
6.	If four numbers $1/2, 1/3, 1/5, 1/x$ are proportional then x is (a) $6/5$ (b) $5/6$ (c) $15/2$ (d) none of these Ans :-C [SM, MTP July 24]
7.	The mean proportional between $12x^2$ and $27y^2$ is (a) $18xy$

	(b) 81_{xy} (c) 8_{xy} (d) none of these Ans :-A [SM, MTP April 23]
8.	If $A = B/2 = C/5$, then A: B: C is (a) 3:5:2 (b) 2:5:8 (c) 1:2:5 (d) none of these Ans :- C
9.	If $a/3 = b/4 = c/7$, then $a + b + c/c$ is (a) 1 (b) 3 (c) 2 (d) none of these Ans :-C
10.	If $p/q = r/s = 2.5/1.5$, the value of $ps : qr$ is (a) $3/5$ (b) 1:1 (c) $5/3$ (d) none of these Ans :-B
11.	If $x:y = z:w = 2.5: 1.5$, the value of $(x + z)/(y + w)$ is (a) 1 (b) $3/5$ (c) $5/3$ (d) none of these Ans :-C
12.	If $(5x-3y)/(5y-3x) = 3/4$, the value of $x : y$ is (a) 2:9 (b) 7:2 (c) 7:9 (d) none of these Ans :-D
13.	If $A : B = 3:2$ and $B : C = 3:5$, then A: B: C is (a) 9:6:10 (b) 6:9:10 (c) 10:9:6 (d) none of these Ans :-A
14.	If $x / 2 = y / 3 = z / 7$ then the value of $(2x - 5y + 4z) / 2y$ is (a) $6/23$ (b) $23/6$ (c) $3/2$ (d) $17/6$ Ans :-D [SM, MTP Nov 23]
15.	If $x : y = 2/3$, $y : z = 4:3$ then $x : y: z$ is

	(a) 2:3:4 (b) 4:3:2 (c) 3:2:4 (d) 8:12:9 Ans:-D
16.	Division of RS. 750 into 3 parts in the ratio 4:5:6 is (a) (200, 250, 300) (b) (250, 250, 250) (c) (350, 250, 150) (d) none of these Ans :- A
17.	The sum of the ages of 3 persons is 150 years. 10 years ago their ages were in the ratio 7:8:9. Their present ages are (a) (45, 50, 55) (b) (40, 60, 50) (c) (35, 45, 70) (d) none of these Ans :- A
18.	The numbers 14, 16, 35, 42 are not in proportion. The fourth term for which they will be in proportion is (a) 45 (b) 40 (c) 32 (d) none of these Ans : B
19.	If $x/y = z/w$, implies $y/x = w/z$, then the process is called (a) Dividendo (b) Componendo (c) Alternendo (d) none of these Ans :- D
20.	If $p/q = r/s = p-r/q-s$, the process is called (a) Subtrahendo (b) Addendo (c) Invertendo (d) none of these Ans :- A [SM, MTP May 19]
21.	If $a/b = c/d$, implies $(a + b)/(a - b) = (c + d)/(c-d)$, the process is called (a) Componendo (b) Dividendo (c) Componendo and Dividendo (d) none of these Ans :-C
22.	If $u/v = w/p$, then $(u-v)/(u + v) = (w-p)/(w+p)$. The process is called

	(a) Invertendo (b) Alternendo (c) Addendo (d) none of these Ans :- D
23.	12, 16, *, 20 are in proportion. Then * is (a) 25 (b) 14 (c) 15 (d) none of these Ans :- C
24.	4, *, 9, $13\frac{1}{2}$ are in proportion. Then * is (a) 6 (b) 8 (c) 9 (d) none of these Ans :- A
25.	The mean proportional between 1.4 gms and 5.6 gms is (a) 28 gms (b) 2.8 gms (c) 3.2 gms (d) none of these Ans :- B
26.	If $\frac{a}{4} = \frac{b}{5} = \frac{c}{9}$ then $\frac{a+b+c}{c}$ is (a) 4 (b) 2 (c) 7 (d) none of these Ans :- B
27.	Two numbers are in the ratio 3: 4; if 6 be added to each number of the ratio, then the new ratio will be 4: 5, then the numbers are (a) 14, 20 (b) 17, 19

	(c) 18 and 24 (d) none of these Ans :- C
28.	If $\frac{a}{4} = \frac{b}{5}$ then (a) $\frac{a+4}{a-4} = \frac{b-5}{b+5}$ (b) $\frac{a+4}{a-4} = \frac{b+5}{b-5}$ (c) $\frac{a-4}{a+4} = \frac{b+5}{b-5}$ (d) none of these Ans :- B
29.	if $a : b = 4:1$ then $\sqrt{\frac{a}{b}} + \sqrt{\frac{b}{a}}$ is (a) $5/2$ (b) 4 (c) 5 (d) none of these Ans :- A
30.	If $\frac{x}{b+c-a} = \frac{y}{c+a-b} = \frac{z}{a+b-c}$ then (a) 1 (b) 0 (c) 5 (d) none of these Ans :- B

Exercise 1(C)

1.	$4x^{-1/4}$ is expressed (a) $-4x^{-1/4}$ (b) x^{-1} (c) $4 / x^{1/4}$ (d) none of these Ans :- C
2.	The value of $8^{1/3}$ is (a) $\sqrt[3]{2}$ (b) 4 (c) 2

	(d) none of these Ans :- C
3.	The value of $2 \times (32)^{1/5}$ is (a) 2 (b) 10 (c) 4 (d) none of these Ans :- C
4.	The value of $4/(32)^{1/5}$ is (a) 8

	(b) 2 (c) 4 (d) none of these Ans :-B
5.	The value of $(8/27)^{1/3}$ is (a) 2/3 (b) 3/2 (c) 2/9 (d) none of these Ans :-A
6.	The value of $2(256)^{-1/8}$ is (a) 1 (b) 2 (c) 1/2 (d) none of these Ans :- A
7.	$2^{1/2} \cdot 4^{1/2}$ is equal to (a) a fraction (b) a positive integer (c) a negative integer (d) none of these Ans :-B
8.	$\left(\frac{81x^4}{y^8}\right)^{1/4}$ has simplified value equal to (a) xy^2 (b) x^2y (c) $9xy^2$ (d) none of these Ans :- D
9.	$x^{a-b} \times x^{b-c} \times x^{c-a}$ is equal to (a) X (b) 1 (c) 0 (d) none of these Ans :- B
10.	The value of $\left(\frac{2p^2q^3}{3xy}\right)^0$ where $p, q, x, y \neq 0$ is equal to (a) 0 (b) 2/3 (c) 1 (d) none of these Ans :-C
11.	$\{(3^3)^2 \times (4^2)^3 \times (5^3)^2\} / \{(3^2)^3 \times (4^3)^2 \times (5^2)^3\}$ is (a) 3/4 (b) 4/5 (c) 4/7 (d) 1 Ans :- D
12.	Which is True?

	(a) $2^0 > (1/2)^0$ (b) $2^0 < (1/2)^0$ (c) $2^0 = (1/2)^0$ (d) none of these Ans :- C
13.	If $x^{1/p} = y^{1/q} = z^{1/r}$ and $xyz = 1$, then the value of $p + q + r$ is (a) 1 (b) 0 (c) 1/2 (d) none of these Ans :- B
14.	The value of $y^{a-b} \times y^{b-c} \times y^{c-a} \times y^{-a-b}$ is (a) y^{a+b} (b) Y (c) 1 (d) $1/y^{a+b}$ Ans :- D
15.	The True option is (a) $x^{2/3} = \sqrt[3]{x^2}$ (b) $x^{2/3} = \sqrt{x^3}$ (c) $x^{2/3} = \sqrt[3]{x^2}$ (d) $x^{2/3} = \sqrt[3]{x^2}$ Ans :-A
16.	The Simplified value of $16x^{-3}y^2 \times 8^{-1}x^3y^{-2}$ (a) 2xy (b) $xy/2$ (c) 2 (d) None of these Ans : C
17.	The value of $(8/27)^{-1/3} \times (32/243)^{-1/5}$ (a) 9/4 (b) 4/9 (c) 2/3 (d) none of these Ans : A
18.	The value of $\left\{\frac{(x+y)^{2/3} \times (x-y)^{2/3}}{\sqrt{x+y} \times \sqrt{(x-y)^3}}\right\}^6$ (a) $(x+y)^2$ (b) $(x-y)$ (c) $x+y$ (d) none of these Ans : C
19.	Simplified value of $(125)^{2/3} \times \sqrt{25} \times \sqrt[3]{5^3} \times 5^{1/2}$ is (a) 5 (b) 1/5 (c) 1 (d) none of these Ans :- D
20.	$[(2)^{1/2} \cdot (4)^{3/4} \cdot (8)^{5/6} \cdot (16)^{7/8} \cdot (32)^{9/10}]^{3/25}$ is

	(a) A fraction (b) an integer (c) 1 (d) none of these Ans :- B
21.	$[1 - \{1 - (1 - x^2)^{-1}\}^{-1}]^{-1/2}$ equal to (a) X (b) $1/x$ (c) 1 (d) none of these Ans :- A [SM, MTP Dec 24]
22.	$[(x^n)^{n-\frac{1}{n}}]^{\frac{1}{n+1}}$ is equal to (a) x^n (b) x^{n+1} (c) x^{n-1} (d) none of these Ans :- C
23.	$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$, then the simplified form of $\left[\frac{x^l}{x^m}\right]^{l^2+lm+m^2} \times \left[\frac{x^m}{x^n}\right]^{m^2+mn+n^2} \times \left[\frac{x^n}{x^l}\right]^{l^2+ln+n^2}$ (a) 0 (b) 1 (c) x (d) none of these Ans :- B
24.	Using $(a - b)^3 = a^3 - b^3 - 3ab(a - b)$ tick the correct of these when $x = p^{1/3} - p^{-1/3}$ (a) $x^3 + 3x = p + 1/p$ (b) $x^3 + 3x = p - 1/p$ (c) $x^3 + 3x = p + 1$ (d) none of these Ans :- B
25.	On simplification, $1/(1 + a^{m-n} + a^{m-p}) + 1/(1 + a^{n-m} + a^{n-p}) + 1/(1 + a^{p-m} + a^{p-n})$ is equal to (a) 0 (b) a

	(c) 1 (d) $1/a$ Ans :- C
26.	The Value of $\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^b}{x^c}\right)^{b+c} \times \left(\frac{x^c}{x^a}\right)^{c+a}$ (a) 1 (b) 0 (c) 2 (d) None of these Ans : A
27.	If $x = 3^{\frac{1}{3}} + 3^{-\frac{1}{3}}$, then $3x^3 - 9x$ is (a) 15 (b) 10 (c) 12 (d) None of these Ans : B [SM, MTP May 22, RTP Sep 24]
28.	If $a^x = b$, $b^y = c$, $c^z = a$, then xyz is (a) 1 (b) 2 (c) 3 (d) None of these Ans : A [SM, MTP Nov 23]
29.	The Value of $\left(\frac{x^a}{x^b}\right)^{(a^2+ab+b^2)} \times \left(\frac{x^b}{x^c}\right)^{(b^2+bc+c^2)} \times \left(\frac{x^c}{x^a}\right)^{(c^2+ca+a^2)}$ (a) 1 (b) 0 (c) -1 (d) None of these Ans : A
30.	If $2^x = 3^y = 6^{-z}$, $\frac{1}{x} + \frac{1}{y} + \frac{1}{z}$ is (a) 1 (b) 0 (c) 2 (d) None of these Ans : B

Exercise 1(D)

1.	Log 6 + log 5 is expressed as (a) Log 11 (b) Log 30 (c) Log 5/6 (d) None of these Ans : B
2.	$\log_2 8$ is equal to (a) 2 (b) 8

	(c) 3 (d) none of these Ans :- C
3.	Log (32/4) is equal to (a) $\log 32/\log 4$ (b) $\log 32 - \log 4$ (c) 2^3 (d) none of these Ans :- B

4.	$\log(1 \times 2 \times 3)$ is equal to (a) $\log 1 + \log 2 + \log 3$ (b) $\log 3$ (c) $\log 2$ (d) none of these Ans :- A
5.	The value of $\log 0.0001$ to the base 0.1 is (a) -4 (b) 4 (c) $1/4$ (d) none of these Ans :- B
6.	If $2 \log x = 4 \log 3$, the x is equal to (a) 3 (b) 9 (c) 2 (d) none of these Ans :- B
7.	$\log_{\sqrt{2}} 64$ is equal to (a) 12 (b) 6 (c) 1 (d) none of these Ans :- A
8.	$\log_{\sqrt[3]{2}} 1728$ is equal to (a) $2\sqrt{3}$ (b) 2 (c) 6 (d) none of these Ans :- C
9.	$\log(1/81)$ to the base 9 is equal to (a) 2 (b) $1/2$ (c) -2 (d) none of these Ans :- C
10.	$\log 0.0625$ to the base 2 is equal to (a) 4 (b) 5 (c) 1 (d) none of these Ans :- D
11.	Given $\log 2 = 0.3010$ and $\log 3 = 0.4771$ the value of $\log 6$ is (a) 0.9030 (b) 0.9542 (c) 0.7781 (d) none of these Ans :- C
12.	The value of $\log_2 \log_2 \log_2 16$ (a) 0

	(b) 2 (c) 1 (d) none of these Ans :- C
13.	The value of $\log_{\frac{1}{3}}$ to the base 9 is (a) $-1/2$ (b) $1/2$ (c) 1 (d) none of these Ans :- A
14.	If $\log x + \log y = \log(x + y)$, y can be expressed as (a) $x-1$ (b) x (c) $x/(x-1)$ (d) none of these Ans :- C
15.	The value of $\log_2 [\log_2 \{\log_3 (\log_3 27^3)\}]$ is equal to (a) 1 (b) 2 (c) 0 (d) none of these Ans :- C
16.	If $\log_2 x + \log_4 x + \log_{16} x = 21/4$, these x is equal to (a) 8 (b) 4 (c) 16 (d) none of these Ans :- A
17.	Given that $\log_{10} 2 = x$ and $\log_{10} 3 = y$, the value of $\log_{10} 60$ is expressed as (a) $x - y + 1$ (b) $x + y - 1$ (c) $x - y - 1$ (d) none of these. Ans :- B [SM, MTP Jan 25, May 20]
18.	Given that $\log_{10} 2 = x$, $\log_{10} 3 = y$, then $\log_{10} 1.2$ is expressed in terms of x and y as (a) $x + 2y - 1$ (b) $x + y - 1$ (c) $2x + y - 1$ (d) none of these Ans :- C
19.	Given that $\log x = m + n$ and $\log y = m - n$, the value of $\log(10x/y^2)$ is expressed in terms of m and n as (a) $1 - m + 3n$

	(b) $m-1 + 3n$ (c) $m + 3n + 1$ (d) none of these Ans :-A
20.	The simplified value of $2 \log_{10} 5 + \log_{10} 8 - 1/2 \log_{10} 4$ is (a) $1/2$ (b) 4 (c) 2 (d) none of these Ans :-C [SM, MTP Nov 23]
21.	$\log [1 - \{1 - (1 - x^2)^{-1}\}^{-1}] - 1/2$ can be written as (a) $\log x^2$ (b) $\log x$ (c) $\log 1/x$ (d) none of these Ans :-B
22.	The simplified value of $\log (\sqrt[4]{729} \sqrt[3]{9^{-1}} \cdot 27^{-4/3})$ is (a) $\log 3$ (b) $\log 2$ (c) $\log \frac{1}{2}$ (d) none of these Ans :-A
23.	The value of $(\log_b a \times \log_c b \times \log_a c)^3$ is equal to

	(a) 3 (b) 0 (c) 1 (d) none of these Ans :-C
24.	The logarithm of 64 to the base $2\sqrt{2}$ is (a) 2 (b) $\sqrt{2}$ (c) $1/2$ (d) none of these Ans :-D
25.	The value of $\log_8 25$ given $\log_{10} 2 = 0.3010$ is (a) 1 (b) 2 (c) 1.5482 (d) none of these Ans :- C

Additional Question Bank

1.	The value of $\left(\frac{6^{-1}7^2}{6^{27}7^{-4}}\right)^{\frac{7}{2}} \times \left(\frac{6^{-2}7^3}{6^{37}7^{-5}}\right)^{\frac{5}{2}}$ is (a) 0 (b) 252 (c) 250 (d) 248 Ans :- B
2.	The value of $\frac{x^{\frac{2}{7}}}{z^{\frac{1}{2}}} \times \frac{x^{\frac{2}{5}}}{z^{\frac{2}{3}}} \times \frac{x^{\frac{9}{7}}}{z^{\frac{2}{3}}} \times \frac{x^{\frac{5}{6}}}{z^{\frac{3}{5}}}$ is (a) 1 (b) -1 (c) 0 (d) None Ans :- A
3.	On simplification $\frac{2^{x+3} \times 3^{2x-y} \times 5^{x+y+3} \times 6^{y+1}}{6^{x+1} \times 10^{y+3} \times 15^x}$ redu (a) -1 (b) 0 (c) 1

	(d) 10 Ans :-C
4.	If $\frac{9^y \cdot 3^2 \cdot (3^{-y})^{-1} - 27^y}{3^{3x} \cdot 2^3} = \frac{1}{27}$ then $x - y$ is given by (a) -1 (b) 1 (c) 0 (d) None Ans :-B
5.	Show that $\left(x^{\frac{1}{a-b}}\right)^{\frac{1}{a-c}} \times \left(x^{\frac{1}{b-c}}\right)^{\frac{1}{b-a}} \times \left(x^{\frac{1}{c-a}}\right)^{\frac{1}{c-b}}$ is given by (a) 1 (b) -1 (c) 3 (d) 0 Ans :-A

6.	Show that $\frac{16(32)^x - 2^{3x-2} \cdot 4^{x+1}}{15(2)^{x-1}(16)^x - \frac{5(5)^{x-1}}{\sqrt{5^{2x}}}}$ is given by (a) 1 (b) -1 (c) 4 (d) 0 Ans :- A
7.	Show that $\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^b}{x^c}\right)^{b+c} \times \left(\frac{x^c}{x^a}\right)^{c+a}$ is given by (a) 0 (b) -1 (c) 3 (d) 1 Ans :- D
8.	Show that $\sqrt{\frac{x^{a^2}}{x^{b^2}}} \times \sqrt{\frac{x^{b^2}}{x^{c^2}}} \times \sqrt{\frac{x^{c^2}}{x^{a^2}}}$ reduces to (a) 1 (b) 0 (c) -1 (d) None Ans :- A
9.	Show that $\left(x^{\frac{b+c}{c-a}}\right)^{\frac{1}{a-b}} \times \left(x^{\frac{c+a}{a-b}}\right)^{\frac{1}{b-c}} \times \left(x^{\frac{a+b}{b-c}}\right)^{\frac{1}{c-a}}$ reduces to (a) 1 (b) 3 (c) -1 (d) None Ans :- A
10.	Show that $\left(\frac{x^b}{x^c}\right)^a \times \left(\frac{x^c}{x^a}\right)^b \times \left(\frac{x^a}{x^b}\right)^c$ reduces to (a) 1 (b) 3 (c) 0 (d) 2 Ans :- A

11.	Show that $\left(\frac{x^b}{x^c}\right)^{1/bc} \times \left(\frac{x^c}{x^a}\right)^{1/ca} \times \left(\frac{x^a}{x^b}\right)^{1/ab}$ reduces to (a) -1 (b) 0 (c) 1 (d) none Ans :- C
12.	Show that $\left(\frac{x^a}{x^b}\right)^{(a^2+ab+b^2)} \times \left(\frac{x^b}{x^c}\right)^{(b^2+bc+c^2)} \times \left(\frac{x^c}{x^a}\right)^{(c^2+ca+a^2)}$ is given by (a) 1 (b) -1 (c) 0 (d) 3 Ans :- A [SM, MTP May 19, May 22]
13.	Show that $2^{x+y} = 4 \times 8 \times 16$, then $(x+y)^2$ is equal to (a) 16 (b) 81 (c) 32 (d) 64 Ans :- B
14.	Show that $\left(\frac{x^b}{x^c}\right)^{b+c-a} \times \left(\frac{x^c}{x^a}\right)^{c+a-b} \times \left(\frac{x^a}{x^b}\right)^{a+b-c}$ is given by (a) 1 (b) 0 (c) -1 (d) None Ans :- A
15.	Show that $\left(\frac{x^a}{x^b}\right)^{a^2-ab+b^2} \times \left(\frac{x^b}{x^c}\right)^{b^2-bc+c^2} \times \left(\frac{x^c}{x^a}\right)^{c^2-ca+a^2}$ is reduces to (a) 1 (b) $x^{-2(a^2+b^2+c^2)}$ (c) $x^{2(a^3+b^3+c^3)}$ (d) $x^{-2(a^3+b^3+c^3)}$ Ans :- C
16.	$x^{a^2b^{-1}c^{-1}} \cdot x^{b^2c^{-1}a^{-1}} \cdot x^{c^2a^{-1}b^{-1}} - x^3$ would reduce to zero if $a + b + c$ is given by

	(a) 1 (b) -1 (c) 0 (d) None Ans :- C
17.	The value of z is given by the following if $z^{\sqrt{z}} = (z\sqrt{z})^2$ (a) 2 (b) $\frac{3}{2}$ (c) $-\frac{3}{2}$ (d) $\frac{9}{4}$ Ans :- D
18.	$\frac{1}{x^b + x^{-c} + 1} + \frac{1}{x^c + x^{-a} + 1} + \frac{1}{x^a + x^{-b} + 3}$ would reduce to one if $a + b + c$ is given by (a) 1 (b) 0 (c) -1 (d) None Ans :- B
19.	On simplification $\frac{1}{1 + z^{a-b} + z^{a-c}} + \frac{1}{1 + z^{b-c} + z^{b-a}} + \frac{1}{1 + z^{c-a} + z^{c-b}}$ would reduce to (a) $\frac{1}{z^{2(a+b+c)}}$ (b) $\frac{1}{z^{(a+b+c)}}$ (c) 1 (d) 0 Ans :- C
20.	If $(5.678)^x = (0.5678)^y = 10^z$ then (a) $\frac{1}{x} - \frac{1}{y} + \frac{1}{z} = 1$ (b) $\frac{1}{x} - \frac{1}{y} - \frac{1}{z} = 0$ (c) $\frac{1}{x} - \frac{1}{y} + \frac{1}{z} = -1$ (d) None Ans :- B
21.	If $x = 4^{1/3} + 4^{-1/3}$ prove that $4x^3 - 12x$ is given by (a) 12 (b) 13 (c) 15 (d) 17 Ans :- D
22.	If $x = 5^{1/3} + 5^{-1/3}$ prove that $5x^3 - 15x$ is given by (a) 25

	(b) 26 (c) 27 (d) 30 Ans :- B
23.	If $ax^{\frac{2}{3}} + bx^{\frac{1}{3}} + c = 0$ then the value of $a^3x^2 + b^3x + c^3$ is given by (a) $3abcx$ (b) $-3abcx$ (c) $3abc$ (d) $-3abc$ Ans :- A
24.	If $a^p = b, b^q = c, c^r = a$ the value of pqr is given by (a) 0 (b) 1 (c) -1 (d) None Ans :- B
25.	If $a^p = b^q = c^r$ and $b^2 = ac$ the value of $\frac{q(p+r)}{pr}$ is given by (a) 1 (b) -1 (c) 2 (d) None Ans :- C
26.	On simplification $\left[\frac{x^a}{x^{a-b}} \div \frac{x^b}{x^{b-a}} \right]^{a+b}$ reduces to (a) 1 (b) -1 (c) 0 (d) None Ans :- D
27.	On simplification $\left[\frac{x^{ab}}{x^{a^2+b^2}} \right]^{a+b} \times \left[\frac{x^{b^2+c^2}}{x^{bc}} \right]^{b+c} \times \left[\frac{x^{ca}}{x^{c^2+a^2}} \right]^{c+a}$ (a) x^{-2a^3} (b) x^{2a^3} (c) $x^{-2(a^3+b^3+c^3)}$ (d) $x^{2(a^3+b^3+c^3)}$ Ans :- A
28.	On simplification $\left[\frac{x^{ab}}{x^{a^2+b^2}} \right]^{a+b} \times \left[\frac{x^{bc}}{x^{b^2+c^2}} \right]^{b+c} \times \left[\frac{x^{ca}}{x^{c^2+a^2}} \right]^{c+a}$ reduces to (a) x^{-2a^3} (b) x^{2a^3}

	(c) $x^{-2(a^3+b^3+c^3)}$ (d) $x^{2(a^3+b^3+c^3)}$ Ans :- C
29	On simplification $\left(\frac{m^x}{m^y}\right)^{x+y} \times \left(\frac{m^y}{m^z}\right)^{y+z} \div 3(m^x m^z)^{x+z} m$ reduces to (a) 3 (b) -3 (c) -1/3 (d) 1/3 Ans : D
30	The value of $\frac{1}{1+a^{y-x}} + \frac{1}{1+a^{x-y}}$ is given by (a) -1 (b) 0 (c) 1 (d) None Ans :- C
31.	If $xyz = 1$ then the value of $\frac{1}{1+x+y^{-1}} + \frac{1}{1+y+z^{-1}} + \frac{1}{1+z+x^{-1}}$ is (a) 1 (b) 0 (c) 2 (d) None Ans :- A
32	If $2^a = 3^b = (12)^c$, then $\frac{1}{c} - \frac{1}{b} - \frac{2}{a}$ reduces to (a) 1 (b) 0 (c) 2 (d) None Ans :- B
33	If $2^a = 3^b = 6^{-c}$ then the value of $\frac{1}{a} + \frac{1}{b} + \frac{1}{c}$ reduce to (a) 0 (b) 2 (c) 3 (d) 1 Ans :- A
34	If $3^a = 5^b = (75)^c$, then the value of $ab - c(2a + b)$ reduces to (a) 1 (b) 0 (c) 3

	(d) 5 Ans :- B
35	If $2^a = 3^b = (12)^c$, then the value of $ab - c(a + 2b)$ reduces to (a) 0 (b) 1 (c) 2 (d) 3 Ans :- A
36	If $2^a = 4^b = 8^c$ and $abc = 288$ then the value $\frac{1}{2a} + \frac{1}{4b} + \frac{1}{8c}$ is given by (a) $\frac{1}{8}$ (b) $-\frac{1}{8}$ (c) $\frac{11}{96}$ (d) $-\frac{11}{96}$ Ans :-C
37	If $a^p = b^q = c^r = d^s$ and $ab = cd$ then the value of $\frac{1}{p} + \frac{1}{q} - \frac{1}{r} - \frac{1}{s}$ reduces to (a) 1/a (b) 1/b (c) 0 (d) 1 Ans :-C
38	If $a^b = b^a$, then the value of $\left(\frac{a}{b}\right)^{\frac{a}{b}} - a^{\frac{a}{b}-1}$ reduces to (a) a (b) b (c) 0 (d) None Ans :-C
39	If $m = b^x$, $n = b^y$ and $(m^y n^x) = b^2$ the value of xy is given by (a) -1 (b) 0 (c) 1 (d) None Ans :- C
40	If $a = xy^{m-1}$, $b = xy^{n-1}$, $c = xy^{p-1}$ then the value of $a^{n-p} \times b^{p-m} \times c^{m-n}$ reduces to (a) 1 (b) -1

	(c) 0 (d) None Ans :- A
41.	If $a = x^{n+p}y^m, b = x^{p+m}y^n, c = x^{m+n}y^p$ then the value of $a^{n-p}xb^{p-m}xc^{m-n}$ reduced to (a) 0 (b) 1 (c) -1 (d) None Ans :- B
42	If $a = \sqrt[3]{\sqrt{2}+1} - \sqrt[3]{\sqrt{2}-1}$ then the value of $a^3 + 3a - 2$ is (a) 3 (b) 0 (c) 2 (d) 1 Ans :- B
43	If $a = x^{\frac{1}{3}} + x^{-\frac{1}{3}}$ then $a^3 - 3a$ is (a) $x + x^{-1}$ (b) $x - x^{-1}$ (c) $2x$ (d) 0 Ans :- A
44	If $a = 3^{1/4} + 3^{-1/4}$ and $b = 3^{1/4} - 3^{-1/4}$ Then the value of $3(a^2 - b^2)^2$ is (a) 67 (b) 65 (c) 64 (d) 62 Ans :- C
45	If $x = \sqrt{3} + \frac{1}{\sqrt{3}}$ and $y = \sqrt{3} - \frac{1}{\sqrt{3}}$ then $x^2 - y^2$ is (a) 5 (b) $\sqrt{3}$ (c) $\frac{1}{\sqrt{3}}$ (d) 4 Ans :- D
46	If $a = \frac{4\sqrt{6}}{\sqrt{2} + \sqrt{3}}$ then the value of $\frac{a + 2\sqrt{2}}{a - 2\sqrt{2}} + \frac{a + 2\sqrt{3}}{a - 2\sqrt{3}}$ is given by (a) 1 (b) -1 (c) 2

	(d) -2 Ans :- C
47	If $P + \sqrt{3}Q + \sqrt{5}R + \sqrt{15}S = \frac{1}{1 + \sqrt{3} + \sqrt{5}}$ then the value of P is (a) 7/11 (b) 3/11 (c) -1/11 (d) -2/11 Ans :- A
48	If $a = 3 + 2\sqrt{2}$ then the value of $a^{\frac{1}{2}} + a^{-\frac{1}{2}}$ is (a) $\sqrt{2}$ (b) $-\sqrt{2}$ (c) $2\sqrt{2}$ (d) $-2\sqrt{2}$ Ans :- C
49	If $a = 3 + 2\sqrt{2}$ then the value of $a^{\frac{1}{2}} - a^{-\frac{1}{2}}$ is (e) $2\sqrt{2}$ (f) 2 (g) $2\sqrt{2}$ (h) $-2\sqrt{2}$ Ans :- B
50	If $a = \frac{1}{2}(5 - \sqrt{21})$ then the value of $a^3 + a^{-3} - 5a^2 - 5a^{-2} + a + a^{-1}$ is (a) 0 (b) 1 (c) 5 (d) -1 Ans :- A
51.	If $a = \sqrt{\frac{7 + 4\sqrt{3}}{7 - 4\sqrt{3}}}$ then the value of $[a(a-14)]^2$ is (a) 14 (b) 7 (c) 2 (d) 1 Ans :- D
52	If $a = 3 - \sqrt{5}$ then the value of $a^4 - a^3 - 20a^2 - 16a + 24$ is (a) 10 (b) 14 (c) 0 (d) 15 Ans :- C

53	If $a = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ then the value of $2a^4 - 21a^3 + 12a^2 - a + 1$ is (a) 21 (b) 1 (c) 12 (d) None Ans :- B
54	The square root of $3 + \sqrt{5}$ is + (a) $\sqrt{\frac{5}{2}} + \sqrt{\frac{1}{2}}$ (b) $-(\sqrt{\frac{5}{2}} + \sqrt{\frac{1}{2}})$ (c) Both the above (d) None Ans :- A
55	If $x = \sqrt{2 - \sqrt{2 - \sqrt{2} \dots \infty}}$ the value of x is given by (a) -2 (b) 1 (c) 2 (d) 0 Ans :- B
56	If $a = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$, $b = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$ then the value of $a + b$ is (a) 10 (b) 100 (c) 98 (d) 99 Ans :- A
57	If $a = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$, $b = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$ then the value of $a^2 + b^2$ is (a) 10 (b) 100 (c) 98 (d) 99 Ans :- C
58	If $a = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$, $b = \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$ then the value of $\frac{1}{a^2} + \frac{1}{b^2}$ is (i) 10 (j) 100

	(k) 98 (l) 99 Ans :- C
59	The square root of $x + \sqrt{x^2 - y^2}$ is given by (a) $\frac{1}{\sqrt{2}} [\sqrt{x+y} + \sqrt{x-y}]$ (b) $\frac{1}{2} [\sqrt{x+y} - \sqrt{x-y}]$ (c) $[\sqrt{x+y} + \sqrt{x-y}]$ (d) $[\sqrt{x+y} - \sqrt{x-y}]$ Ans :- A
60	The square root of $11 - \sqrt{120}$ is given by (a) $\sqrt{6} + \sqrt{5}$ (b) $\sqrt{6} - \sqrt{5}$ (c) $2\sqrt{3} - 3\sqrt{2}$ (d) $2\sqrt{3} + 3\sqrt{2}$ Ans : B
61	$\log(1 + 2 + 3)$ is exactly equal to (a) $\log 1 + \log 2 + \log 3$ (b) $\log(1 \times 2 \times 3)$ (c) Both the above (d) none Ans :- C
62	The logarithm of 21952 to the base of $2\sqrt{7}$ and 19683 to the base of $3\sqrt{3}$ are (a) Equal (b) Not equal (c) Have a difference of 2269 (d) None Ans :- A
63	The value of $4\log \frac{8}{25} - 3\log \frac{16}{125} - \log 5$ is (a) 0 (b) 1 (c) 2 (d) -1 Ans :- A
64	$a^{\log b - \log c} \times b^{\log c - \log a} \times c^{\log a - \log b}$ has a value of (a) 1 (b) 0 (c) -1 (d) None Ans :- A
65	$\frac{1}{\log_{ab}(abc)} + \frac{1}{\log_{bc}(abc)} + \frac{1}{\log_{ca}(abc)}$ is equal to (a) 0 (b) 1 (c) 2

	(d) -1 Ans :-C
66	$\frac{1}{1 + \log_a(bc)} + \frac{1}{1 + \log_b(ca)} + \frac{1}{1 + \log_c(ab)}$ is equal to (a) 0 (b) 1 (c) 3 (d) -1 Ans :-B
67	$\frac{1}{\log_{a b}(x)} + \frac{1}{\log_{b/c}(x)} + \frac{1}{\log_c(x)}$ is equal to (a) 0 (b) 1 (c) 3 (d) -1 Ans :-A
68	$\log_b(a) \cdot \log_c(b) \cdot \log_a(c)$ is equal to (a) 0 (b) 1 (c) -1 (d) None Ans :-B
69	$\log_b(a^{\frac{1}{2}}) \cdot \log_c(b^3) \cdot \log_a(c^{\frac{2}{3}})$ is equal to (a) 0 (b) 1 (c) -1 (d) None Ans :-B
70	The value of is $a^{\log_b c} \cdot b^{\log_c a} \cdot c^{\log_a b}$ (a) 0 (b) 1 (c) -1 (d) None Ans :-B
71	The value of $(bc)^{a \log_b c} \cdot (ca)^{a \log_c a} \cdot (ab)^{a \log_a b}$ is (a) 0 (b) 1 (c) -1 (d) None Ans :-B
72	The value of $\log \frac{a^n}{b^n} + \log \frac{b^n}{c^n} + \log \frac{c^n}{a^n}$ is

	(a) 0 (b) 1 (c) -1 (d) None Ans :-A
73	The value of $\log \frac{a^2}{bc} + \log \frac{b^2}{ca} + \log \frac{c^2}{ab}$ is (a) 0 (b) 1 (c) -1 (d) None Ans :-A
74	$\log(a^9) + \log a = 10$ if the value of a is given by (a) 0 (b) 10 (c) -1 (d) None Ans :-B
75	If $\frac{\log a}{y-z} = \frac{\log b}{z-x} = \frac{\log c}{x-y}$ the value of abc is (a) 0 (b) 1 (c) -1 (d) None Ans :-B
76	If $\frac{\log a}{y-z} = \frac{\log b}{z-x} = \frac{\log c}{x-y}$ the value of $a^{y+z} \cdot b^{z+x} \cdot c^{x+y}$ is given by (a) 0 (b) 1 (c) -1 (d) None Ans :- B
77	If $\log a = \frac{1}{2} \log b = \frac{1}{5} \log c$ the value of $a^4 b^3 c^{-2}$ is (a) 0 (b) 1 (c) -1 (d) None Ans :-B
78	If $\frac{1}{2} \log a = \frac{1}{3} \log b = \frac{1}{5} \log c$ the value of $a^4 - bc$ is (a) 0 (b) 1 (c) -1

	(d) None
	Ans :-A
79	If $\frac{1}{4}\log_2 a = \frac{1}{6}\log_2 b$ $= -\frac{1}{24}\log_2 c$ the value of a^3b^2c is (a) 0 (b) 1 (c) -1 (d) None Ans :-B
80	The value of $\frac{1}{\log_a(ab)} + \frac{1}{\log_b(ab)}$ is (a) 0 (b) 1 (c) -1 (d) None Ans :-B
81.	If $\frac{1}{\log_a t} + \frac{1}{\log_b t} + \frac{1}{\log_c t}$ $= \frac{1}{\log_z t}$ then the value if z is given by (a) abc (b) a+b+c (c) a(b+c) (d) (a+b)c Ans :-A
82	If $l = 1 + \log_a bc, m = 1 + \log_b ca, n$ $= 1 + \log_c ab$ then the value of $\frac{1}{l}$ $+ \frac{1}{m} + \frac{1}{n} - 1$ is (a) 0 (b) 1 (c) -1 (d) 3 Ans :-A
83	If $a = b^2 = c^3 = d^4$ then the value of $\log_a(abcd)$ is (a) $1 + 1/2 + 1/3 + 1/4$ (b) $1 + 1/2! + 1/3! + 1/4!$ (c) $1 + 2 + 3 + 4$ (d) None Ans :-A
84	The sum of the series $\log_a b + \log_{a^2} b^2 + \log_{a^3} b^3$ $+ \dots \dots \log_{a^n} b^n$ is given by (a) $\log_a b^n$ (b) $\log_{a^n} b$ (c) $\log_{a^n} b^n$

	(d) None
	Ans :-A
85	$a^{\left(\frac{1}{\log_b a}\right)}$ has a value of (a) a (b) b (c) (a+b) (d) None Ans :-B
86	The value of the following expression $a^{\log_a b \cdot \log_b c \cdot \log_c a}$ (a) + (b) abcdt (c) (a + b + c + d + t) (d) None Ans :-A
87	For any three consecutive integers x y z the equation $\log(1+xz) - 2\log y = 0$ is (a) True (b) False (c) Sometime true (d) Cannot be determine in the case of variable with cyclic order Ans :-A
88	if $\log \frac{a+b}{3} = \frac{1}{2}(\log a + \log b)$ then the value of $\frac{a}{b} + \frac{b}{a}$ is (a) 2 (b) 5 (c) 7 (d) 3 Ans :-C
89	If $a^2 + b^2 = 7ab$ then the value of is $\log \frac{a+b}{3}$ $-\frac{\log a}{2} - \frac{\log b}{2}$ (a) 0 (b) 1 (c) -1 (d) 7 Ans :-A
90	If $a^3 + b^3 = 0$ then the value of $\log(a + b)$ $-\frac{1}{2}(\log a + \log b + \log 3)$ is equal to (a) 0 (b) 1 (c) -1

	(d) 3 Ans :-A
91.	If $x = \log_a bc$; $y = \log_b ca$; $z = \log_c ab$ then the value of $xyz - x - y - z$ is (a) 0 (b) 1 (c) -1 (d) 2 Ans :-D
92	On solving the equation $\log t + \log(t - 3) = 1$ we get the value of t as (a) 5 (b) 2 (c) 3 (d) 0 Ans :-A
93	On solving the equation $\log_3[\log_2(\log_3 t)] = 1$ we get the value of t as (a) 8 (b) 18 (c) 81 (d) 6561 Ans :-D
94	On solving the equation $\log_{1/2}[\log_t(\log_4 32)] = 2$ we get the value of t as (a) 5/2 (b) 25/4 (c) 625/16 (d) None Ans :-C
95	If $(4.8)^x = (0.48)^y = 1,000$ then the value of $\frac{1}{x} - \frac{1}{y}$ is (a) 3 (b) -3 (c) 1/3 (d) -1/3 Ans :-C
96	If $x^{2a-3}y^{2a} = x^{6-a}y^{5a}$ then the value of $\log\left(\frac{x}{y}\right)$ is (a) $3\log x$ (b) $\log x$ (c) $6\log x$ (d) $5\log x$ Ans :-A

97	If $x = \frac{e^n - e^{-n}}{e^n + e^{-n}}$ then the value of n is (a) $\frac{1}{2} \log_e \frac{1+x}{1-x}$ (b) $\log_e \frac{1-x}{1+x}$ (c) $\log_e \frac{1+x}{1-x}$ (d) $\frac{1}{2} \log_e \frac{1-x}{1+x}$ Ans :-A
98	P and Q started a business investing Rs. 85,000 and Rs. 15,000 respectively . In what the ratio the profits earned after 2 year be divided between P and Q respectively ? (a) 3:4 (b) 3:5 (c) 15:23 (d) 17:23 Ans :-D
99	Anand and Deepak started a business investing Rs.22,500 and Rs. 35,000 respectively . Out of a total Profit of Rs. 13,800. Deepak's share is (a) Rs. 5,400 (b) Rs. 7,200 (c) Rs. 8,400 (d) Rs. 9,600 Ans :-C
100	A, B, C enter into a partnership investing Rs.35,000 ,Rs.45,000 and Rs 55,000 respectively. The respective shares of A, B, C in an annual profit of Rs. 40,500 are (a) Rs 10,500 , Rs 13,500, Rs16,500 (b) Rs 11,500 , Rs13,000 Rs 16,000 (c) Rs 11,500 Rs 14,000 Rs 15,500 (d) Rs 11,500 Rs 12,500 Rs 16,500 Ans :-A
101	Reena and Shaloo are partner in a business. Reena invests Rs. 35,000 for 8 months and Shaloo invests Rs. 42,000 for 10 months. Out of a profit of Rs. 31,570, Reena's share is: (a) Rs. 9471 (b) Rs. 12628 (c) Rs. 18040 (d) Rs. 18942 Ans :-B
102	Kanchan started a business investing Rs. 9,000. After five months, Sameer joined with

	a capital of Rs. 8000. If at the end of the year, they earn a profit of Rs. 6970, then what will be the share of Sameer in the profit? (a) Rs. 1883.78 (b) Rs. 2380 (c) Rs. 3690 (d) Rs. 3864 Ans :-B
10 3.	Simran Started a software business by investing Rs.50, 000 . After six months , Nanda joined her with capital of Rs. 80,000. After three years , they earned a profit of Rs.24,500. What was Simran's share in the profit ? (a) Rs.10500 (b) Rs.9423 (c) Rs.12,500 (d) Rs.14,000 Ans :-B
10 4.	A and B started a business in partnership by investing Rs.20, 000 and Rs.15,000 respectively. After six months , C joined them with Rs.20000. What will be B's share in the total profit of Rs.20,000 earned at the end of 2 years from the starting of the business ? (a) Rs.7500 (b) Rs.9000 (c) Rs.9500 (d) Rs. 10,000 Ans :-A
10 5.	Aman started a business Investing Rs.70,000. Rakhi joined him after six months with an amount of Rs.1,05,000 and Sagar joined them with Rs.1.4 lakhs after another six months . The amount of profit earned should be distributed in what ratio among six months. The amount profit earned should be distributed in what ratio among Aman, Rakhi, and Sagar respectively, 3 years after Aman started the business ? (a) 7:6:10 (b) 12:15: 16 (c) 45:45:56 (d) None of these Ans :-B
10 6.	A began a business with and is joined afterwards by B with Rs.42,500. For how much

	period does B join , if profits at the end of the year are divided in the ratio of 3:1 ? (a) 4 months (b) 5 months (c) 6 months (d) 8 months Ans :-D
10 7.	A, B and C enter into partnership by investing in the ratio of 3:2:4 . After one year , B invests another Rs.2,70, 000 and C , at the end of 2 years, also invests Rs.2,70, 000. At the end of three years , profits are shared in the ratio of 3:4: 5 . Find the initial investment of each . (a) 2,70,000:1,80,000 :3,60,000 (b) 2,70,000:1,50,000 :3,60,000 (c) 2,50,000:1,80,000 :3,60,000 (d) 2,70,000:1,80,000 :3,00,000 Ans :-A
10 8.	A , B and C enter into partnership . A invests 3 times as much as B invests and B invests $\frac{2}{3}$ of what C invests . At the end of the year , the profit earned is Rs.6600. What is the share of B ? (a) Rs.1200 (b) Rs.1500 (c) Rs.1800 (d) Rs.2000 Ans :-A
10 9.	A and B can do a work in 8 days , B and C can do the same work in 12 days A, B and together can finish it in 6 days . A and C together will do it in : (a) 4 days (b) 6 days (c) 8 days (d) 12 days Ans :-C

RTP and MTP

1.	The third proportional between (a^2-b^2) and $(a+b)^2$ is (a) $\frac{a+b}{a-b}$ (b) $\frac{a-b}{a+b}$ (c) $\frac{(a-b)^2}{a+b}$ (d) $\frac{(a+b)^2}{a-b}$ Ans : (d) [MTP May 18, June 24]	(c) $\frac{19}{9}$ (d) $\frac{19}{7}$ Ans : (c) [MTP May 19]
2.	The ratio of the prices of two Fans was 16: 23. Two years later when the price of the first has increased by 10% and that of the second by Rs. 477, the ratio of the prices becomes 11: 20. Find the original prices of the two Fans. (a) Rs. 848, Rs. 1,219. (b) Rs. 838, Rs. 1,119. (c) Rs. 828, Rs. 1,219. (d) Rs. 848 Rs. 1,229. Ans : A [MTP Jan 25, May 20]	7. The value of $\log_{0.1} 0.001 =$ 24(a) 3 (b) 2 (c) 4 (d) 1/3 Ans : (a) [MTP May 18, June 24]
3.	The third proportional to 49 and 21 (a) 6 (b) 9 (c) 12 (d) 28 Ans : B [MTP Jan 25]	8. if $\log_4 x = -3/2$. Then x is (a) 1/8 (b) 1/4 (c) 1/2 (d) 1/3 Ans : (a) [MTP May 18, June 24]
4.	$\log_4(x^2 + x) - \log_4(x + 1) = 2$. find x. (a) 16 (b) 0 (c) -1 (d) None of these Ans : A [MTP Jan 25, April 24]	9. A man travels from Delhi to Agra at an average speed of 30km per hour and back at an average speed of 60 km per hour. What's the average Speed (a) 48 Km/ hr (b) 40 km/hr (c) 45 km/hr (d) 35 km/hr Ans : (b) [MTP May 18, June 24]
5.	If $x = \log_{24} 12$; $y = \log_{36} 24$; $z = \log_{48} 36$ then $xyz + 1 = ?$ (a) 2xy (b) 2zx (c) 2yz (d) 2 Ans : D [MTP Jan 25, May 22] Check answer 2yz	10. For p, q, r, s > 0 the value of each ratio is $\frac{p}{q+r} = \frac{q}{r+s} = \frac{r}{s+p} = \frac{s}{p+q}$ (a) 1/2 (b) 1/3 (c) 1/4 (d) 1 Ans : (a) [MTP Nov 18]
6.	If $\frac{a}{3} = \frac{b}{4} = \frac{c}{5}$ then $\frac{2a + 3b + 2c}{4a - b + 2c}$ is (a) $\frac{11}{19}$ (b) $\frac{17}{9}$	11. Let x, y and z are three positive numbers and $P = \frac{x+y+z}{2}$; if $(p-x):(p-y):(p-z) = 3:5:7$ then the ratio (a) 4:5:6 (b) 6:5:4 (c) 3:5:7 (d) 7:5:3 Ans : (b) [MTP Nov 18]
	12. if $x = \sqrt{6 + 6 + (\sqrt{7 + 2\sqrt{6}})} - \sqrt{6}$ then the	

	value (a) 1 (b) 2 (c) 3 (d) 6 Ans : (a) [MTP Nov 18]
13.	If $\log_7 \log_5 (\sqrt{x+5} + \sqrt{x}) = 0$, the value of x is (a) 0 (b) 1 (c) $1/4$ (d) 4 Ans : (d) [MTP Nov 18]
14.	The value of $(3^{n+1}+3^n) / (3^{n+3}-3^{n+1})$ is equal to: (a) $1/5$ (b) $1/6$ (c) $1/4$ (d) $1/9$ Ans : B [MTP Dec 24, May 22]
15.	If $u^{5x} = v^{5y} = w^{5z}$ and $u^2 = vw$ then $xy + zx - 2yz$ (a) 0 (b) 1 (c) 2 (d) None of these Ans : A [MTP Dec 24]
16.	The students in three classes are in the ratio 2 : 3 : 5. If 40 students are increased in each class the ratio changes to 4 : 5 : 7. Originally the total number of students was (a) 180 (b) 400 (c) 100 (d) 200 Ans: (d) [MTP April 24]
17.	A bag contains coins of denominations 1 rupee, 2 rupee and 5 rupees. Their numbers are in the ratio 4:3:2. If bag has total of Rs. 1800 then find the number of 2 rupee coins? (a) 270 (b) 230 (c) 180 (d) 210 Ans : (a) [MTP April 24]

18.	If $a = \log_{12} 24$, $b = \log_{36} 24$, $c = \log_{48} 36$ then prove that $1 + abc =$ (a) $2bc$ (b) $2ca$ (c) $2ba$ (d) $3bc$ Ans. (a) [MTP May 19]
19.	If $x = 5^{1/3} + 5^{-1/3}$, $5x^3 - 15x$ is given by (a) 25 (b) 26 (c) 27 (d) 30 Ans. (b) [MTP May 19]
20.	$5^{16} + 125^5$ is divisible by which of the following (a) 5 (b) 6 (c) 8 (d) 9 Ans : (b) [MTP May 20]
21.	If $pqr = a^x$, $qrs = a^y$ and $rsp = a^z$, then find the value of $(pqrs)^{1/2}$ (a) a^{x+y+z} (b) $a^{\sqrt{x+y+z}}$ (c) $a^{4\sqrt{x+y+z}}$ (d) $(a^{x+y+z})^{1/4}$ Ans : (d) [MTP may 20]
22.	If $x : y = 2 : 3$, then find $(5x+2y) : (3x-y)$ (a) $13/3$ (b) $16/3$ (c) $19/3$ (d) $7/3$ Ans : (b) [MTP Nov 20, May 22]
23.	A bag contains Rs187 in the form 1 rupee, 50 paise and 10 paise coins in the ratio 3:4:5. Find the number of each type of coins. (a) 102, 136, 170 (b) 136, 102, 170 (c) 170, 102, 136 (d) none Ans : (a) [MTP Nov 20]
24.	$\log_e x + \log (1+x) = 0$ IS equivalent to (a) $x^2+x+e = 0$ (b) $x^2+x-e = 0$ (c) $x^2+x+1 = 0$

	(d) $x^2+x-1=0$ Ans : (d) [MTP Nov 20]
25.	The ratio of the speed of the two trains is 2: 5. If the distances they travel are in the ratio 5: 9, find the ratio of times taken by them (a) 2: 9 (b) 18: 25 (c) 25: 18 (d) 10: 45 Ans : (c) [MTP Nov 20]
26.	If $x = 3^{1/4} + 3^{-1/4}$ and $y = 3^{1/4} - 3^{-1/4}$, then the value of $(x^2 + y^2)^2$ will be (a) 12 (b) 18 (c) 46 (d) 64 Ans : (d) [MTP Nov 20, Nov 23]
27.	Find the value of $(x+y)$, if $(x+y/x^2) - (x/y + y/x) + (x/y^2 + y) = 1/3$ (a) 1/3 (b) 3 (c) $\frac{1}{2}$ (d) 2 Ans : (b) [MTP Nov 20]
28.	Two numbers are in the ratio 7: 8 if 3 is added to each of them, their ratio becomes 8:9, the numbers are (a) 14, 16 (b) 24, 27 (c) 21, 24 (d) 16, 18 Ans : (c) [MTP May 21]
29.	Which of the numbers are not in proportions? (a) 6,8,5,7 (b) 7.3,14,6 (c) 18,27,12,18 (d) 8,6,12, 9 Ans : (a) [MTP May 21]
30.	If $x^2 + y^2 = 7xy$, then $\log \frac{1}{3}(x+y)$ = then is (a) $(\log x + \log y)$ (b) $\frac{1}{2}(\log x + \log y)$ (c) $\frac{1}{3}(\log x + \log y)$ (d) $3(\log x / \log y)$ Ans : (b)

	[MTP May 21]
31.	The value of $2^n + 2^{n-1} / 2^{n+1} - 2^n$ is (a) 1/2 (b) 3/2 (c) 2/3 (d) 2 Ans : (b) [MTP May 21]
32.	If $3^x = 5^y = 75^z$ then (a) $x+y-z=0$ (b) $2/x + 1/y = 1/z$ (c) $1/x + 2/y = 1/z$ (d) $2/x + 1/z = 1/y$ Ans : (c) [MTP May 21]
33.	The value of $\sqrt{6 + \sqrt{6 + \sqrt{6 + \dots}}}$ is (a) -3 (b) 2 (c) 3 (d) 4 Ans : (c) [MTP May 21]
34.	For $a, b, c > 0$ the value of each ratio is $\frac{a}{b+c} = \frac{b}{c+a} = \frac{c}{a+b}$, then find the value of each ratio if $a+b+c \neq 0$ (a) $\frac{1}{2}$ (b) 1/3 (c) $\frac{1}{4}$ (d) 1 Ans : (a) [MTP Nov 18]
35.	If $\frac{x}{b+c-a} = \frac{y}{c+a-b} = \frac{z}{a+b-c}$ then find the value of $(b-c)x + (c-a)y + (a-b)z =$ (a) 0 (b) -1 (c) +1 (d) $\frac{1}{2}$ Ans : (a) [MTP Nov 18]
36.	$x:y:z = 2:3:5$. If $x+y+z = 60$ then the value of z is (a) 30 (b) 15 (c) 9 (d) 12 Ans : (a) [MTP Nov 18]
37.	Simplify $\log_2 3 \log_3 4 \log_4 5 \log_5 6 \log_6 7 \log_7 8$ (a) 2

	(b) 3 (c) 4 (d) $3/2$ Ans : (b) [MTP Nov 18]
38.	The ratio of the earnings of two persons 3:2. If each saves $1/5^{\text{th}}$ of their earnings, the ratio of their savings (a) 2:3 (b) 3:2 (c) 4:5 (d) 5:4 Ans: (b) [MTP Nov 19]
39.	The Third Proportional to 15 and 20 is (a) $80/3$ (b) 80 (c) $80/7$ (d) 120 Ans: (a) [MTP Nov 19, May 21]
40.	If $\log_9 x + \log_3 x = 3/2$ then x is (a) 0 (b) 1 (c) $\frac{1}{3}$ (d) 3 Ans: (b) [MTP Nov 19]
41.	If $x+y, y+z, z+x$ are in the ratio 6 : 7 : 8 and $x + y + z = 14$ then the value of x is (a) 6 (b) 7 (c) 8 (d) 10 Ans: (b) [MTP Nov 19]
42.	If $2^x = 3^y = 6^z$ then $\frac{1}{x} + \frac{1}{y} =$ (a) $\frac{1}{z}$ (b) $\frac{1}{z} - \frac{1}{x}$ (c) $\frac{1}{z} + \frac{1}{x}$ (d) 0 Ans: (a) [MTP Nov 19]
43.	If $x:y = 3:5$, then find $(1/x+1/y):(1/x-1/y)$ (a) 2 (b) 4 (c) 6 (d) 8 Ans : (b) [MTP Nov 21]

44.	if $A: B = 3:5$ and $B:C = 5:4$, $C:D = 2:3$ and D is 50% more than E, find the ratio between A and E (a) 2:3 (b) 3:4 (c) 3:5 (d) 4:5 Ans : (b) [MTP Nov 21]
45.	Find the value of $\sqrt{6561} + \sqrt[4]{6561} + \sqrt[8]{6561}$ (a) 81 (b) 93 (c) 121 (d) 243 Ans : (b) [MTP Nov 21]
46.	Find the value of $\log x^n/y^n + \log y^n/z^n + \log z^n/x^n$ (a) -1 (b) 0 (c) 1 (d) 2 Ans : (b) [MTP Nov 21]
47.	If $\frac{8^n \times 2^3 \times 16^{-1}}{2^n \times 4^2} = 1/4$ then the value of n (a) 1 (b) 3 (c) $3/2$ (d) $2/3$ Ans : (c) [MTP Nov 21]
48.	Simplify $\frac{2^n + 2^{n-1}}{2^{n+1} + 2^n}$ (a) 2^{n+2} (b) 2^n (c) 2 (d) $\frac{1}{2}$ Ans : (d) [MTP May 19]
49.	If $2a = 3b = 12c$ then $\frac{1}{a} + \frac{1}{b} =$ (a) $\frac{1}{c}$ (b) $\frac{1}{c} - \frac{1}{a}$ (c) $-\frac{1}{c}$ (d) 0 Ans : (b) [MTP May 19]
50.	The value of $\log_{64} 512$ is (a) 9 (b) $9/2$ (c) $9/4$ (d) $3/2$

	Ans : (d) [MTP May 19]
51.	The value of $(\log_b a \log_c b \log_a c)^3 =$ (a) 1 (b) 3 (c) $(\log_b C)^3$ (d) $(\log_c b)^3$ Ans : (a) [MTP May 19]
52.	If $\frac{3x-2}{5x-6}$ is the duplicate ratio of $2/3$ then the value of 'x' is (a) 2 (b) 6 (c) 5 (d) 9 Ans: (b) [MTP May 22]
53.	If $abc = 2$, then the value of $\frac{1}{1+a+2b^{-1}} + \frac{1}{1+\frac{1}{2}b+c^{-1}} + \frac{1}{1+c+a^{-1}}$ is (a) 1 (b) 2 (c) 3 (d) $1/2$ Ans: (a) [MTP May 22]
54.	The value of $\frac{x^2 - (y-z)^2}{(x+z)^2 - y^2} + \frac{y^2 - (x-z)^2}{(x+y)^2 - z^2} + \frac{z^2 - (x-y)^2}{(y+z)^2 - x^2}$ (a) 0 (b) 1 (c) -1 (d) ∞ Ans: (b) [MTP May 22]
55.	Fourth proportional to x, 2x, (x+1) is: (a) X+2 (b) X-2 (c) 2x+2 (d) 2x-2 Ans: (c) [MTP May 22]
56.	If $\frac{1}{2}$, $1/3$, $1/5$ and $1/x$ are in proportion, then the value of x will be (a) $15/2$ (b) $6/5$ (c) $10/3$ (d) $5/6$ Ans : (a) [MTP May 22, Dec 23]
57.	The ratio compounded of 4:5 and sub-

	duplicate of a:9 is 8:15. Then value of "a" is (a) 2 (b) 3 (c) 4 (d) 5 Ans: (c) [MTP May 22]
58.	If A:B = 2:5, then $(10A + 3B) : (5A + 2B)$ is equal to (a) 7:4 (b) 7:3 (c) 6:5 (d) 7:9 Ans: (a) [MTP May 22]
59.	Find the value of $[\log_{10} \sqrt{25} - \log_{10} 2^3 + \log_{10} 4^2]$ (a) x (b) 10 (c) 1 (d) None Ans: (c) [MTP May 22]
60.	If $(25)^{150} = (25x)^{50}$, then the value of x will be: (a) 5^3 (b) 5^4 (c) 5^2 (d) 5 Ans : (b) [MTP May 22, Dec 23, June 23]
61.	A person has asset worth of Rs. 1,48,200. He wish to divide it amongst his wife, son and daughter in the ratio 3:2:1 respectively. From this assets share of his wife son will be : (a) Rs 24,700 (b) Rs 49,400 (c) Rs 74,100 (d) Rs 37,050 Ans : (b) [MTP May 22]
62.	X, Y, Z together starts a business, if X invests 3 times as much as Y invests and Y invests two third of what Z invests, then the ratio of capitals of X,Y, Z is (a) 3:9:2 (b) 6:3:2 (c) 3:6:2 (d) 6:2:3 Ans : (b) [MTP May 22]
63.	If $xy + yz + zx = -1$, then the value of $(\frac{x+y}{1+xy} + \frac{y+z}{1+yz} + \frac{z+x}{1+zx})$ is

	$\frac{z+y}{1+zy} + \frac{x+z}{1+zx}$ is (a) xyz (b) $-1/yz$ (c) $1/xyz$ (d) $1/x+y+z$ Ans : (c) [MTP Nov 21]
64.	The salaries of A, B and C are of ratio 2:3:5. if the increments of 15%, 10% and 20% are done their respective salaries, then find new salaries. (a) 23: 33: 60 (b) 33:23:60 (c) 23: 60:33 (d) 33: 60: 23 Ans : (a) [MTP Nov 21, RTP Jan 25]
65.	If A: B = 5:3, B:C = 6:7 and C: D = 14:9 then the value of A: B:C:D (a) 20:14:12:9 (b) 20:9:12:14 (c) 20:9:14:12 (d) 20:12:14:9 Ans : (d) [MTP Nov 21]
66.	The salary of P is 25% lower than that of Q and the salary of R is 20% higher than Q, the ratio of salary of R and P will be (a) 5:8 (b) 8:5 (c) 5:3 (d) 3:5 Ans : (b) [MTP Nov 21]
67.	The value of $\frac{64 (b^4 a^3)^6}{[4 (a^3 b)^2 \times (ab)^2]}$ (a) $16a^{10}b^{20}$ (b) $4a^{20}b^{10}$ (c) $8a^{10}b^{20}$ (d) $4a^{10}b^{20}$ Ans: (a) [MTP April 23]
68.	Four persons A, B, C, D wish to share a sum in the ratio of 5:4:2:3. If D gets Rs. 1000 less than C, then the share of B ? (a) 2000 (b) 1200 (c) 2400 (d) 3000 Ans : A [MTP April 23]

69.	If $\log_3 4, \log_4 5, \log_5 6, \log_6 7, \log_7 8, \log_8 9 = x$, then find the value of x (a) 4 (b) 2 (c) 3 (d) 1 Ans : B [MTP April 23]
70.	if $\frac{1}{2} \log_{10} 4 = y$ and if $\frac{1}{2} \log_{10} 9 = x$, then the value of $\log_{10} 15$ (a) $x-y+1$ (b) $x+y-1$ (c) $x+y+1$ (d) $y-x+1$ Ans : A [MTP April 23]
71.	In a hostel ration stocked for 400 students upto 31 days. After 28 days 280 students were vacated the hostel. Find the number of days for which the remaining ratio will be sufficient for the remaining students. (a) 5 (b) 4 (c) 7 (d) 10 Ans : D [MTP April 23]
72.	what is the value of $\frac{p+q}{p-q}$ if $\frac{p}{q} = 7$ (a) $4/3$ (b) $2/3$ (c) $2/6$ (d) $7/8$ Ans : A [Mtp Nov 23]
73.	Given that $\log_{10} 2 = x, \log_{10} 3 = y$, then $\log_{10} 120$ is expressed in terms of x and y as (a) $2x - y + 1$ (b) $2x + y + 1$ (c) $2x - y - 1$ (d) none of these Ans :-B [MTP Nov 23, July 24]
74.	The ratio of the number of boys and girls in a school is 2:5. if there are 280 students in the school, find number of girls in the school (a) 200 (b) 250 (c) 150 (d) 100 Ans: (a)

	[MTP May 21]
75.	$\left(\frac{\sqrt{3}}{9}\right)^{5/2} \left(\frac{9}{3\sqrt{3}}\right)^{7/2} \times 9$ is equal to : (a) 1 (b) $\sqrt{3}$ (c) $3\sqrt{3}$ (d) $\frac{3}{9\sqrt{3}}$ Ans: (a)
	[MTP May 21]
76.	The value of $\frac{\log_3 8}{\log_9 16 \cdot \log_4 10}$ is (a) $3\log_{10} 2$ (b) $7\log_{10} 3$ (c) $3\log_e z$ (d) None Ans: (a)
	[MTP May 21]
77.	If $\log 2 = 0.3010$ and $\log 3 = 0.4771$, then the value of $\log 24$ is : (a) 1.0791 (b) 1.7323 (c) 1.3801 (d) 1.8301 Ans : C
	[MTP June 23, Dec 23]
78.	On solving the equation $\log t + \log (t-3) = 1$ we get the value of t as (a) 5 (b) 2 (c) 3 (d) 0 Ans : A
	[MTP Dec 23]
79.	A box contains 276 coins of 5 rupees, 2 rupees and 1 rupee. The value of each kind of coins are in the ratio 2:3:5 respectively. The number of 2 rupees coin is (a) 52 (b) 60 (c) 76 (d) 85 Ans : B
	[MTP Dec 23]
80.	What must be added to each term of the ratio 49 : 68, so that it becomes 3 : 4 ? (a) 3 (b) 5 (c) 8

	(d) 9 Ans : C
	[MTP Dec 23]
81.	Two vessels containing water and milk in the ratio 2 : 3 and 4 : 5 are mixed in the ratio 1 : 2. The ratio of milk and water in the resulting mixture. (a) 58 : 77 (b) 77 : 58 (c) 68 : 77 (d) None of these Answer (b)
	[MTP June 23]
82.	If $(x - 9) : (3x + 6)$ is the duplicate ratio of 4 : 9, find the value of x (a) $x = 9$ (b) $x = 16$ (c) $x = 36$ (d) $x = 25$ Answer (d)
	[MTP June 23]
83.	Value of $(a^{1/8} + a^{-1/8}) (a^{1/8} - a^{-1/8}) (a^{1/4} + a^{-1/4}) (a^{1/2} + a^{-1/2})$ is : (a) $a + 1/a$ (b) $a - 1/a$ (c) $a^2 + 1/a$ (d) $a^2 - 1/a$ Answer (b)
	[MTP June 23]
84.	$7\log\left(\frac{16}{25}\right) + 5\log\left(\frac{25}{24}\right) + 3\log\left(\frac{81}{80}\right)$ is equal to (a) 0 (b) 1 (c) Log 2 (d) Log 3 Ans: (c)
	[MTP June 23]
85.	$\log_4(x^2+x) - \log_4(x+1) = 2$. find x (a) 16 (b) 0 (c) -1 (d) None of these Answer (a)
	[MTP June 23, RTP jan 25]
86.	$\left(\frac{\sqrt{3}}{9}\right)^{5/2} \left(\frac{9}{3\sqrt{3}}\right)^{7/2} \times 9$ (a) 1 (b) $\sqrt{3}$ (c) $3\sqrt{3}$ (d) $\frac{3}{9\sqrt{3}}$ Ans : (a)

	[MTP Nov 22]
87.	$\log_a \sqrt{3} = \frac{1}{6}$, find the value of a (a) 9 (b) 81 (c) 27 (d) 3 Ans : (c)
	[MTP Nov 22]
88.	$\log \frac{p^2}{qr} + \log \frac{q^2}{pr} + \log \frac{r^2}{pq} =$ (a) pqr (b) $1/pqr$ (c) 1 (d) 0 Ans : (d)
	[MTP Nov 22]
89.	A bag contained 25 paise, 10 paise and 5 paise are in the ratio 3:2:1. The total value of ` 40, the number of 5 paise coins is (a) 45 (b) 48 (c) 40 (d) 20 Ans : (c)
	[MTP Nov 22]
90.	If $2^x \times 3^y \times 5^z = 720$ then the value of x, y, z ? (a) 4, 2, 1 (b) 1, 2, 4 (c) 2, 4, 1 (d) 1, 4, 2 Ans : (a)
	[MTP Nov 22]
91.	What must be added to each term of the ratio 49:68. So that it becomes 3:4 ? (a) 3 (b) 5 (c) 8 (d) 9 Ans : (c)
	[MTP Nov 22]
92.	Find the value of $\frac{3t^{-1}}{t^{-3}}$ (a) $\frac{3}{t^2}$ (b) $\frac{3}{t^3}$ (c) $\frac{3}{t^2}$ (d) $\frac{3}{t^3}$ Ans: (a)
	[MTP Nov 22]

93.	The ratio of two numbers are 3: 4. The difference of their squares is 28 Greater number is: (a) 8 (b) 12 (c) 24 (d) 64 Ans : (a)
	[MTP Nov 22]
94.	The price of scooter and moped are in the ratio 7: 9. The price of moped is ₹1600 more than that of scooter. Then the price of moped is: (a) 7200 (b) 5600 (c) 800 (d) 700 Ans : (a)
	[MTP Nov 22]
95.	$\log_{0.01} 10,000 = ?$ (a) 2 (b) - 2 (c) 4 (d) - 4 Ans : (b)
	[MTP Nov 22]
96.	Value of $\left[9^{n+\frac{1}{4}} \cdot \frac{\sqrt{3 \cdot 3^n}}{3 \cdot \sqrt{3^{-n}}}\right]^{\frac{1}{n}}$ (a) 9 (b) 27 (c) 81 (d) 3 Ans : (b)
	[MTP Nov 22]
97.	Find the value of $[\log_{10} \sqrt{25} - \log_{10} 2^3 + \log_{10} 4^2]^x$ (a) x (b) 10 (c) 1 (d) None Ans: (c)
	[RTP Jan 25]
98.	The ratio of number of boys and number of girls in a school is found to be 15:32. How many boys and equal number of girls should be added to bring the ratio to 2/3? (a) 19 (b) 20 (c) 23 (d) 27 Ans : (a)

	[MTP July 24]
99.	The expenditures and savings of a person are in the ratio 4:1. If his savings are increased by 25% of his income, then what is the new ratio of his expenditure and savings ? (a) 11:9 (b) 8:5 (c) 7:5 (d) 7:4 Ans : (a) [MTP May 24]
100.	If $\log \frac{a+b}{2} = \frac{1}{2} (\log a + \log b)$. The value of $a^2 + b^2$ is (a) 6ab (b) 8ab (c) $6a^2b^2$ (d) None of these Ans: (a) [MTP May 24]
101.	If $\log \left(\frac{a+b}{4} \right) = \frac{1}{2} (\log a + \log b)$ then $\frac{a}{b} + \frac{b}{a}$ (a) 12 (b) 14

	(c) 16 (d) 8 Ans : B [MTP Nov 23]
102.	If $\frac{\sqrt{x+5}+\sqrt{x-16}}{\sqrt{x+5}-\sqrt{x-16}} = \frac{7}{3}$ then x equals (a) 10 (b) 20 (c) 30 (d) 40 Ans : B [MTP Nov 23]

Chapter 2 : Equations

Exercise 2 (A)

1.	The equation $-7x + 1 = 5 - 3x$ will be satisfied for x equal to: (a) 2 (b) -1 (c) 1 (d) None of these Ans : B
2.	The root of the equation $\frac{x+4}{4} + \frac{x-5}{3} = 11$ is (a) 20 (b) 10 (c) 2 (d) None of these Ans : A
3.	Pick up the correct value of x for $\frac{x}{30} = \frac{2}{45}$ (a) $x = 5$ (b) $x = 7$ (c) $x = 1\frac{1}{3}$ (d) none of these Ans : C
4.	The solution of the equation $\frac{x+24}{5} = 4 + \frac{x}{4}$ (a) 6 (b) 10 (c) 16 (d) None of these Ans : C
5.	8 is the solution of the equation (a) $\frac{x+4}{4} + \frac{x-5}{3} = 11$ (b) $\frac{x+4}{2} + \frac{x+10}{9} = 8$

	(c) $\frac{x+24}{5} = 4 + \frac{x}{4}$ (d) $\frac{x-15}{10} + \frac{x+5}{5} = 4$ Ans : B
6.	The value of y that satisfies the equation $\frac{y+11}{6} - \frac{y+1}{9} = \frac{y+7}{4}$ is (a) -1 (b) 7 (c) 1 (d) -1/7 Ans : D
7.	The solution of the equation $(p+2)(p-3) + (p+3)(p-4) = p(2p-5)$ is (a) 6 (b) 7 (c) 5 (d) None of these Ans : A
8.	The equation $\frac{12x+1}{4} = \frac{15x-1}{5} + \frac{2x-5}{3x-1}$ is true for (a) $X = 1$ (b) $X = 2$ (c) $X = 5$ (d) $X = 7$ Ans : D
9.	Pick up the correct value x for which $\frac{x}{0.005} - \frac{1}{0.0005} = 0$ (a) $X = 0$ (b) $X = 1$ (c) $X = 10$ (d) None of these Ans : C

Exercise 2 (b)

1.	The sum of two numbers is 52 and their difference is 2. The numbers are (a) 17 and 15 (b) 12 and 10 (c) 27 and 25 (d) none of these Ans : C
2.	The diagonal of a rectangle is 5 cm and one of its sides is 4 cm. Its area is (a) 20 sq.cm.

	(b) 12 sq.cm. (c) 10 sq.cm. (d) none of these Ans : B
3.	Divide 56 into two parts such that three times the first part exceeds one third of the second by 48. The parts are. (a) (20, 36) (b) (25, 31) (c) (24, 32)

	(d) none of these Ans : A
4.	The sum of the digits of a two digit number is 10. If 18 be subtracted from it the digits in the resulting number will be equal. The number is (a) 37 (b) 73 (c) 75 (d) None of these numbers. Ans : B
5.	The fourth part of a number exceeds the sixth part by 4. The number is (a) 84 (b) 44 (c) 48 (d) None of these Ans : C
6.	Ten years ago the age of a father was four times of his son. Ten years hence the age of the father will be twice that of his son. The present ages of the father and the son are. (a) (50, 20) (b) (60, 20) (c) (55, 25) (d) None of these Ans : A [SM, MTP May 19]
7.	The product of two numbers is 3200 and the quotient when the larger number is divided by the smaller is 2. The numbers are (a) (16, 200) (b) (160, 20) (c) (60, 30) (d) (80, 40) Ans : D
8.	The denominator of a fraction exceeds the numerator by 2. If 5 be added to the numerator the fraction increases by unity. The fraction is. (a) $\frac{5}{7}$ (b) $\frac{1}{3}$ (c) $\frac{7}{9}$ (d) $\frac{3}{5}$ Ans : D
9.	Three persons Mr. Roy, Mr. Paul and Mr. Singh together have Rs.51. Mr. Paul has Rs. 4 less than Mr. Roy and Mr. Singh has got ₹ 5 less than Mr. Roy. They have the money as.

	(a) (₹ 20, ₹ 16, ₹ 15) (b) (₹ 15, ₹ 20, ₹ 16) (c) (₹ 25, ₹ 11, ₹ 15) (d) none of these Ans : A [SM, MTP Jan 25, May 20]
10.	A number consists of two digits. The digits in the ten's place is 3 times the digit in the unit's place. If 54 is subtracted from the number the digits are reversed. The number is (a) 39 (b) 92 (c) 93 (d) 94 Ans : C [SM, MTP May 18, June 24]
11.	One student is asked to divide a half of a number by 6 and other half by 4 and then to add the two quantities. Instead of doing so the student divides the given number by 5. If the answer is 4 short of the correct answer then the number was (a) 320 (b) 400 (c) 480 (d) None of these Ans : C
12.	If a number of which the half is greater than $\frac{1}{5}$ th of the number by 15 then the number is (a) 50 (b) 40 (c) 80 (d) None of these Ans : A

Exercise 2(C)

1. The solution of the set of equations $3x + 4y = 7$, $4x - y = 3$ is (a) (1, -1) (b) (1, 1) (c) (2, 1) (d) (1, -2) Ans : B	6. The pair satisfying the equations $x + 5y = 36$, $\frac{x+y}{x-y} = \frac{5}{3}$ is given by (a) (16, 4) (b) (4, 16) (c) (4, 8) (d) none of these. Ans : A
2. The values of x and y satisfying the equations $x/2 + y/3 = z$, $x + 2y = 8$ are given by the pair. (a) (3, 2) (b) (-2, -3) (c) (2, 3) (d) None of these Ans : C	7. Solve for x and y : $x - 3y = 0$, $x + 2y = 20$. (a) $x = 4$, $y = 12$ (b) $x = 12$, $y = 4$ (c) $x = 5$, $y = 4$ (d) none of these Ans : B
3. $x/p + y/q = 2$, $x + y = p + q$ are satisfied by the values given by the pair. (a) $(x=p, y=q)$ (b) $(x=q, y=p)$ (c) $(x=1, y=1)$ (d) none of these Ans : A	8. The simultaneous equations $7x - 3y = 31$, $9x - 5y = 41$ have solutions given by (a) (-4, -1) (b) (-1, 4) (c) (4, -1) (d) (3, 7) Ans : C
4. The solution for the pair of equations $\frac{1}{16x} + \frac{1}{15y} = \frac{9}{20}$, $\frac{1}{20x} - \frac{1}{27y} = \frac{4}{45}$ is given by (a) (1/4, 1/3) (b) (1/3, 1/4) (c) (3, 4) (d) (4, 3) Ans : A	9. $1.5x + 2.4y = 1.8$, $2.5(x+1) = 7y$ have solutions as (a) (0.5, 0.4) (b) (0.4, 0.5) (c) (1/2, 2/5) (d) (2, 5) Ans : B
5. Solve for x and y: $\frac{4}{x} - \frac{5}{y} = \frac{x+y}{xy} + \frac{3}{10}$ and $3xy = 10$ (y-x) (a) (5, 2) (b) (-2, -5) (c) (2, -5) (d) (2, 5) Ans : D	10. The values of x and y satisfying the equations $\frac{3}{x+y} + \frac{2}{x-y} = 3$, $\frac{2}{x+y} + \frac{3}{x-y} = 3\frac{2}{3}$ are given by (a) (1, 2) (b) (-1, -2) (c) (1, 1/2) (d) (2, 1) Ans : D

Exercise 2 (D)

1. $1.5x + 3.6y = 2.1$, $2.5(x+1) = 6y$ (a) (0.2, 0.5) (b) (0.5, 0.2) (c) (2, 5) (d) (-2, -5) Ans : A	(a) (6, 9) (b) (9, 6) (c) (60, 90) (d) (90, 60) Ans : C
2. $\frac{x}{5} + \frac{y}{6} + 1 = \frac{x}{6} + \frac{y}{5} = 28$	3. $\frac{x}{4} = \frac{y}{4} = \frac{z}{2}$, $7x + 8y + 5z = 62$ (a) (4, 3, 2) (b) (2, 3, 4) (c) (3, 4, 2)

	(d) (4, 2, 3) Ans : A
4.	$\frac{xy}{x+y} = 20, \frac{yz}{y+z} = 40, \frac{zx}{z+x} = 24$ (a) (120, 60, 30) (b) (60, 30, 120) (c) (30, 120, 60) (d) (30, 60, 120) Ans : D
5.	$2x + 3y + 4z = 0, x + 2y - 5z = 0, 10x + 16y - 6z = 0$ (a) (0, 0, 0) (b) (1, -1, 1) (c) (3, 2, -1) (d) (1, 0, 2) Ans : A
6.	$\frac{1}{3}(x+y) + 2z = 21, 3x - \frac{1}{2}(y+z) = 65, x + \frac{1}{2}z = 10$ (a) (4, 9, 5) (b) (2, 9, 5) (c) (24, 9, 5) (d) (5, 24, 9) Ans : C
7.	$\frac{4}{x} - \frac{5}{y} = \frac{x+y}{xy} + \frac{3}{10}, 3xy = 10(y-x)$ (a) (2, 5) (b) (5, 2) (c) (2, 7) (d) (3, 4) Ans : A

8.	$\frac{x}{0.01} + \frac{y+0.03}{0.05} = \frac{y}{0.02} + \frac{x+0.03}{0.04} = 2$ (a) (1, 2) (b) (0.1, 0.2) (c) (0.01, 0.02) (d) (0.02, 0.01) Ans : C
9.	$\frac{xy}{y-x} = 110, \frac{yz}{z-y} = 132, \frac{zx}{z+x} = \frac{60}{11}$ (a) (12, 11, 10) (b) (10, 11, 12) (c) (11, 10, 12) (d) (12, 10, 11) Ans : B
10.	$3x-4y+70z = 0, 2x+3y-10z = 0, x+2y+3z = 13$ (a) (1, 3, 7) (b) (1, 7, 3) (c) (2, 4, 3) (d) (-10, 10, 1) Ans : D

Exercise 2 (E)

1.	Monthly incomes of two persons are in the ratio 4 : 5 and their monthly expenses are in the ratio 7 : 9. If each saves ₹ 50 per month find their monthly incomes. (a) (500, 400) (b) (400, 500) (c) (300, 600) (d) (350, 550) Ans : B
2.	Find the fraction which is equal to $\frac{1}{2}$ when both its numerator and denominator are increased by 2. It is equal to $\frac{3}{4}$ when both are increased by 1 (a) $\frac{3}{8}$ (b) $\frac{5}{8}$ (c) $\frac{2}{8}$ (d) $\frac{2}{3}$

	Ans : A
3.	The age of a person is twice the sum of the ages of his two sons and five years ago his age was thrice the sum of their ages. Find his present age. (a) 60 years (b) 52 years (c) 51 years (d) 50 years Ans : D [SM, MTP Nov 18]
4.	A number between 10 and 100 is five times the sum of its digits. If 9 be added to it the digits are reversed find the number. (a) 54 (b) 53

	(c) 45 (d) 55 Ans : C
5.	The wages of 8 men and 6 boys amount to ₹ 33. If 4 men earn ₹ 4.50 more than 5 boys determine the wages of each man and boy. (a) (₹ 1.50, ₹ 3) (b) (₹ 3, ₹ 1.50) (c) (₹ 2.50, ₹ 2) (d) (₹ 2, ₹ 2.50) Ans : B [SM, MTP Jan 25, May 20]
6.	A number consisting of two digits is four times the sum of its digits and if 27 be added to it the digits are reversed. The number is : (a) 63 (b) 35 (c) 36 (d) 60 Ans : C
7.	Of two numbers, $\frac{1}{5}$ th of the greater is equal to $\frac{1}{3}$ rd of the smaller and their sum is 16. The numbers are: (a) (6, 10) (b) (9, 7) (c) (12, 4) (d) (11, 5) Ans : A
8.	y is older than x by 7 years 15 years back x's age was $\frac{3}{4}$ of y's age. Their present ages are: (a) (x=36, y=43) (b) (x=50, y=43) (c) (x=43, y=50) (d) (x=40, y=47) Ans : A
9.	The sum of the digits in a three digit number is 12. If the digits are reversed the number is increased by 495 but reversing only of the ten's and unit digits increases the number by

	36. The number is (a) 327 (b) 372 (c) 237 (d) 273 Ans : C
10.	Two numbers are such that twice the greater number exceeds twice the smaller one by 18 and $\frac{1}{3}$ rd of the smaller and $\frac{1}{5}$ th of the greater number are together 21. The numbers are: (a) (36, 45) (b) (45, 36) (c) (50, 41) (d) (55, 46) Ans : B
11.	The demand and supply equations for a certain commodity are $4q + 7p = 17$ and $p = \frac{q}{3} + \frac{7}{4}$ respectively where p is the market price and q is the quantity then the equilibrium price and quantity are: (a) 2, $\frac{3}{4}$ (b) 3, $\frac{1}{2}$ (c) 5, $\frac{3}{5}$ (d) None of these Ans : A

Exercise 2 (F)

1.	If the roots of the equation $2x^2 + 8x - m^3 = 0$ are equal then value of m is (a) -3 (b) -1 (c) 1 (d) -2 Ans : D

2.	If $2^{2x+3} - 3^2 \cdot 2^x + 1 = 0$ then values of x are (a) 0, 1 (b) 1, 2 (c) 0, 3 (d) 0, -3 Ans : D

3.	The values of $4 + \frac{1}{4 + \frac{1}{4 + \frac{1}{\dots \infty}}}$ (a) $1 \pm \sqrt{2}$ (b) $2 + \sqrt{5}$ (c) $2 \pm \sqrt{5}$ (d) none of these Ans : B
4.	If α, β be the roots of the equation $2x^2 - 4x - 3 = 0$ the value of $\alpha^2 + \beta^2$ is (a) 5 (b) 7 (c) 3 (d) -4 Ans : B [SM, MTP May 19]
5.	If the sum of the roots of the quadratic equation $ax^2 + bx + c = 0$ is equal to the sum of the $\frac{b^2}{ac} + \frac{bc}{a^2}$ is equal to (a) 2 (b) -2 (c) 1 (d) -1 Ans : A
6.	The equation $x^2 - (p+4)x + 2p + 5 = 0$ has equal roots the values of p will be. (a) ± 1 (b) 2 (c) ± 2 (d) -2 Ans : C [SM, MTP May 18, June 24]
7.	The roots of the equation $x^2 + (2p-1)x + p^2 = 0$ are real if. (a) $p \geq 1$ (b) $p \leq 4$ (c) $p \geq 1/4$ (d) $p \leq \frac{1}{4}$ Ans : D [SM, MTP Jan 25, May 20]
8.	If $x = m$ is one of the solutions of the equation $2x^2 + 5x - m = 0$ the possible values

	of m are (a) (0, 2) (b) (0, 2) (c) (0, 2) (d) (0, 2) Ans : B
9.	If p and q are the roots of $x^2 + 2x + 1 = 0$ then the values of $p^3 + q^3$ becomes (a) 2 (b) -2 (c) 4 (d) -4 Ans : B
10.	If $L + M + N = 0$ and L, M, N are rationals the roots of the equation $(M+N-L)x^2 + (N+L-M)x + (L+M-N) = 0$ are (a) real and irrational (b) real and rational (c) imaginary and equal (d) real and equal Ans : B
11.	If α and β are the roots of $x^2 = x + 1$ then value of $\frac{\alpha^2}{\beta} - \frac{\beta^2}{\alpha}$ is (a) $2\sqrt{5}$ (b) $\sqrt{5}$ (c) $3\sqrt{5}$ (d) $-2\sqrt{5}$ Ans : D
12.	If $p \neq q$ and $p^2 = 5p - 3$ and $q^2 = 5q - 3$ the equation having roots as p/q and q/p is (a) $x^2 - 19x + 3 = 0$ (b) $3x^2 - 19x - 3 = 0$ (c) $3x^2 - 19x + 3 = 0$ (d) $3x^2 + 19x + 3 = 0$ Ans : C
13.	If one root of $5x^2 + 13x + p = 0$ be reciprocal of the other then the value of p is (a) -5 (b) 5 (c) $1/5$ (d) $-1/5$ Ans : B

Exercise 2 (G)

1.	A solution of the quadratic equation $(a+b-2c)x^2 + (2a-b-c)x + (c+a-2b) = 0$ is (a) $x = 1$ (b) $x = -1$

	(c) $x = 2$ (d) $x = -2$ Ans : B
2.	If the root of the equation $x^2 - 8x + m = 0$

	exceeds the other by 4 then the value of m is (a) $m = 10$ (b) $m = 11$ (c) $m = 9$ (d) $m = 12$ Ans : D
3.	The values of x in the equation $7(x+2p)^2 + 5p^2 = 35xp + 117p^2$ are (a) $(4p, -3p)$ (b) $(4p, 3p)$ (c) $(-4p, 3p)$ (d) $(-4p, -3p)$ Ans : A
4.	The solutions of the equation $\frac{6x}{x+1} + \frac{6(x+1)}{x} = 13$ are (a) $(2, 3)$ (b) $(3, -2)$ (c) $(-2, -3)$ (d) $(2, -3)$ Ans : D
5.	The satisfying values of x for the equation $\frac{1}{x+p+q} = \frac{1}{x} + \frac{1}{p} + \frac{1}{q}$ are (a) (p, q) (b) $(-p, -q)$ (c) $(p, -p)$ (d) $(-p, q)$ Ans : B
6.	The values of x for the equation $x^2 + 9x + 18 = 6 - 4x$ are (a) $(1, 12)$ (b) $(-1, -12)$ (c) $(1, -12)$ (d) $(-1, 12)$ Ans : B
7.	The values of x satisfying the equation $\sqrt{2x^2 + 5x - 2} - \sqrt{2x^2 + 5x - 9} = 1$ are (a) $(2, -9/2)$

	(b) $(4, -9)$ (c) $(2, 9/2)$ (d) $(-2, 9/2)$ Ans : A
8.	The solution of the equation $3x^2 - 17x + 24 = 0$ are (a) $(2, 3)$ (b) $(2, 3\frac{2}{3})$ (c) $(3, 2\frac{2}{3})$ (d) $(3, \frac{2}{3})$ Ans : C
9.	The equation $\frac{3(3x^2+15)}{6} + 2x^2 + 9 = \frac{2x^2+96}{7} + 6$ (a) $(1, 1)$ (b) $(1/2, -1)$ (c) $(1, -1)$ (d) $(2, -1)$ Ans : C
10.	The equation $(\frac{l-m}{2})x^2 - (\frac{l-m}{2})x + m = C$ has got two values of x to satisfy the equation given as (a) $(1, \frac{2m}{l-m})$ (b) $(1, \frac{m}{l-m})$ (c) $(1, \frac{2l}{l-m})$ (d) $(1, \frac{1}{l-m})$ Ans : A

Exercise 2(H)

1.	The sum of two numbers is 8 and the sum of their squares is 34. Taking one number as x form an equation in x and hence find the numbers. The numbers are (a) $(7, 10)$ (b) $(4, 4)$ (c) $(3, 5)$ (d) $(2, 6)$

	Ans : C [SM, MTP April 23]
2.	The difference of two positive integers is 3 and the sum of their squares is 89. Taking the smaller integer as x form a quadratic equation and solve it to find the integers. The integers are. (a) $(7, 4)$

	(b) (5, 8) (c) (3, 6) (d) (2, 5) Ans : B
3.	Five times of a positive whole number is 3 less than twice the square of the number. The number is (a) 3 (b) 4 (c) -3 (d) 2 Ans : A
4.	The area of a rectangular field is 2000 sq.m and its perimeter is 180m. Form a quadratic equation by taking the length of the field as x and solve it to find the length and breadth of the field. The length and breadth are (a) (205m, 80m) (b) (50m, 40m) (c) (60m, 50m) (d) None Ans : B
5.	Two squares have sides p cm and (p + 5) cms. The sum of their squares is 625 sq. cm. The sides of the squares are (a) (10 cm, 30 cm) (b) (12 cm, 25 cm) (c) (15 cm, 20 cm) (d) none of these Ans : C
6.	Divide 50 into two parts such that the sum of their reciprocals is 1/12. The numbers are (a) (24, 26) (b) (28, 22) (c) (27, 23) (d) (20, 30) Ans : D
7.	There are two consecutive numbers such that the difference of their reciprocals is 1/240. The numbers are (a) (15, 16) (b) (17, 18) (c) (13, 14)

	(d) (12, 13) Ans : A
8.	The hypotenuse of a right-angled triangle is 20cm. The difference between its other two sides be 4cm. The sides are (a) (11cm, 15cm) (b) (12cm, 16cm) (c) (20cm, 24cm) (d) none of these Ans : B
9.	The sum of two numbers is 45 and the mean proportional between them is 18. The numbers are (a) (15, 30) (b) (32, 13) (c) (36, 9) (d) (25, 20) Ans : C
10.	The sides of an equilateral triangle are shortened by 12 units 13 units and 14 units respectively and a right angle triangle is formed. The side of the equilateral triangle is (a) 17 units (b) 16 units (c) 15 units (d) 18 units Ans : A
11.	A distributor of apple Juice has 5000 bottle in the store that it wishes to distribute in a month. From experience it is known that demand D (in number of bottles) is given by $D = -2000p^2 + 2000p + 17000$. The price per bottle that will result zero inventory is (a) ₹ 3 (b) ₹ 5 (c) ₹ 2 (d) none of these. Ans : A
12.	The sum of two irrational numbers multiplied by the larger one is 70 and their difference is multiplied by the smaller one is 12; the two numbers are (a) $3\sqrt{2}, 2\sqrt{3}$ (b) $5\sqrt{2}, 3\sqrt{5}$ (c) $2\sqrt{2}, 5\sqrt{2}$ (d) none of these. Ans : C

Exercise 2 (I)

1.	The solution of the cubic equation $x^3 - 6x^2 + 11x - 6 = 0$ is given by the triplet : (a) (-1, 1 -2)

	(b) (1, 2, 3) (c) (-2, 2, 3) (d) (-2, 2, 3)

	Ans : B
2.	The cubic equation $x^3 + 2x^2 - x - 2 = 0$ has 3 roots namely. (a) (1, -1, 2) (b) (-1, 1, -2) (c) (-1, 1, -2) (d) (1, 2, 2) Ans : B
3.	$x, x - 4, x + 5$ are the factors of the left-hand side of the equation. (a) $x^3 + 2x^2 - x - 2 = 0$ (b) $x^3 + x^2 - 20x = 0$ (c) $x^3 - 3x^2 - 4x + 12 = 0$ (d) $x^3 - 6x^2 + 11x - 6 = 0$ Ans : B
4.	The equation $3x^3 + 5x^2 = 3x + 5$ has got 3 roots and hence the factors of the left-hand side of the equation $3x^3 + 5x^2 - 3x - 5 = 0$ are (a) $x - 1, x - 2, x - 5/3$ (b) $x - 1, x + 1, 3x + 5$ (c) $x + 1, x - 1, 3x - 5$ (d) $x - 1, x + 1, x - 2$ Ans : B
5.	The roots of the equation $x^3 + 7x^2 - 21x - 27 = 0$ are (a) (-3, -9, -1) (b) (3, -9, -1) (c) (3, 9, 1) (d) (-3, 1, 9) Ans : B
6.	The roots of $x^3 + x^2 - x - 1 = 0$ are (a) (-1, -1, 1)

	(b) (1, 1, -1) (c) (-1, -1, -1) (d) (1, 1, 1) Ans : A
7.	The satisfying value of $x^3 + x^2 - 20x = 0$ are (a) (1, 4, -5) (b) (2, 4, -5) (c) (0, -4, 5) (d) (0, 4, -5) Ans : D
8.	The roots of the cubic equation $x^3 - 6x^2 + 9x - 4 = 0$ are (a) (4, 1, -1) (b) (-4, -1, -1) (c) (-4, -1, 1) (d) (1, 1, 4) Ans : D
9.	If $4x^3 + 8x^2 - x - 2 = 0$ then value of $(2x+3)$ is given by (a) 4, -1, 2 (b) -4, 2, 1 (c) 2, -4, -1 (d) none of these. Ans : A
10.	The rational root of the equation $2x^3 - x^2 - 4x + 2 = 0$ is (a) $\frac{1}{2}$ (b) $-\frac{1}{2}$ (c) 2 (d) -2 Ans : A

Additional Question Bank

1.	Solving equation $x^2 - (a+b)x + ab = 0$ are, value(s) of x (a) a, b (b) a (c) b (d) None Ans : A
2.	Solving equation $x^2 - 24x + 135 = 0$ are, value(s) of x (a) 9, 6 (b) 9, 15 (c) 15, 6 (d) None Ans : B
3.	If $\frac{x}{b} + \frac{b}{x} = \frac{a}{b} + \frac{b}{a}$ the roots of the equation are

	(a) $a, b^2 / a$ (b) $a^2, b/a^2$ (c) $a^2, b^2 / a$ (d) a, b^2 Ans : A
4.	Solving equation $\frac{6x+2}{4} - \frac{2x^2-1}{2x^2+2} - \frac{10x-1}{4x}$ we get roots as (a) ± 1 (b) +1 (c) -1 (d) 0 Ans : B
5.	Solving equation $3x^2 - 14x + 16 = 0$ we get roots as (a) ± 1 (b) 2 and $8/3$

	(c) 0 (d) None Ans : B
6.	Solving equation $3x^2 - 14x + 8 = 0$ we get roots as (a) ± 4 (b) ± 2 (c) $4, 2/3$ (d) None Ans : C
7.	Solving equation $(b-c)x^2 + (c-a)x + (a-b) = 0$ following roots are obtained (a) $b-a/b-c, 1$ (b) $(a-b)(a-c), 1$ (c) $B-c/a-b, 1$ (d) None Ans : A
8.	Solving equation $7\sqrt{\frac{x}{1-x}} + 8\sqrt{\frac{1-x}{x}} = 15$ following roots are obtained (a) $\frac{64}{113}, \frac{1}{2}$ (b) $\frac{1}{1}, \frac{1}{1}$ (c) $\frac{50}{49}, \frac{65}{1}$ (d) $\frac{50}{1}, \frac{65}{64}$ Ans : A
9.	Solving equation $6\left[\sqrt{\frac{x}{1-x}} + \sqrt{\frac{1-x}{x}}\right] = 13$ following roots are obtained (a) $\frac{4}{13}, \frac{9}{13}$ (b) $\frac{-4}{13}, \frac{-9}{13}$ (c) $\frac{4}{13}, \frac{5}{13}$ (d) $\frac{6}{13}, \frac{7}{13}$ Ans : A
10.	Solving equation $z^2 - 6z + 9 = 4\sqrt{z^2 - 6z + 6}$ following roots are obtained (a) $3 + 2\sqrt{3}, 3 - 2\sqrt{3}$ (b) $5, 1$ (c) all the above (d) None Ans : C
11.	Solving equation $\frac{x + \sqrt{12p-x}}{x - \sqrt{12p-x}} = \frac{\sqrt{p+1}}{\sqrt{p-1}}$ following roots are obtained (a) $3p$ (b) both $3p$ and $-4p$

	(c) only $-4p$ (d) $-3p, 4p$ Ans : A
12.	Solving equation $(1+x)^{2/3} + (1-x)^{2/3} = 4(1-x^2)^{1/3}$ are, values of x (a) $\frac{5}{\sqrt{3}}$ (b) $-\frac{5}{\sqrt{3}}$ (c) $\pm \frac{5}{3\sqrt{3}}$ (d) $\pm \frac{15}{\sqrt{3}}$ Ans : C
13.	Solving equation $(2x+1)(2x+3)(x-1)(x-2) = 150$ the roots available are (a) $\frac{1 \pm \sqrt{129}}{4}$ (b) $7/3, -3$ (c) $-7/2, 3$ (d) None Ans : A
14.	Solving equation $(2x+3)(2x+5)(x-1)(x-2) = 30$ the roots available are (a) $0, \frac{1}{2}, -\frac{11}{4}, \frac{9}{4}$ (b) $0, -\frac{1}{2}, \frac{-1 \pm \sqrt{105}}{4}$ (c) $0, -\frac{1}{2}, -\frac{11}{4}, -\frac{9}{4}$ (d) None Ans : B
15.	Solving equation $z + \sqrt{z} = \frac{6}{25}$ the value of z works out to (a) $1/5$ (b) $2/5$ (c) $1/25$ (d) $2/25$ Ans : C
16.	Solving equation $z^{10} - 33z^5 + 32 = 0$ the following values of z are obtained (a) $1, 2$ (b) $2, 3$ (c) $2, 4$ (d) $1, 2, 3$ Ans : A
17.	When $\sqrt{2x+1} + \sqrt{3x+4} = 7$ the value of z is given by (a) 1 (b) 2 (c) 3 (d) 4 Ans : D
18.	Solving equation $\sqrt{x^2 - 9x + 18} + \sqrt{x^2 + 2x - 15} = \sqrt{x^2 - 4x + 3}$ following roots

	are obtained (a) $3, \frac{2 \pm \sqrt{91}}{3}$ (b) $\frac{2 \pm \sqrt{94}}{3}$ (c) $4, -\frac{8}{3}$ (d) $3, 4 - \frac{8}{3}$ Ans : A
19.	Solving equation $\sqrt{y^2 + 4y - 21} + \sqrt{y^2 - y - 6} = \sqrt{6y^2 - 5y - 3}$ following roots are obtained (a) 2, 3, 5/3 (b) 2, 3, -5/3 (c) -2, -3, 5/3 (d) -2, -3, -5/3 Ans : B
20.	Solving equation $6x^4 + 11x^3 - 9x^2 - 11x + 6 = 0$ following roots are obtained (a) $\frac{1}{2}, -2, \frac{-1 \pm \sqrt{37}}{6}$ (b) $-\frac{1}{2}, 2, \frac{-1 \pm \sqrt{37}}{6}$ (c) $\frac{1}{2}, -2, \frac{5}{6}, \frac{-7}{6}$ (d) None Ans : A
21.	If $\frac{x - bc}{d + c} + \frac{x - ca}{c + a} + \frac{x - ab}{a + b} = a + b + c$ the value of x is (a) $a^2 + b^2 + c^2$ (b) $a(a + b + c)$ (c) $(a + b)(b + c)$ (d) $ab + bc + c$ Ans : D
22.	If $\frac{x+2}{x-2} \cdot \frac{x-2}{x+2} = \frac{x-1}{x+3} \cdot \frac{x+3}{x-3}$ then the values of x are (a) $0, \pm\sqrt{6}$ (b) $0, \pm\sqrt{3}$ (c) $0, \pm 2\sqrt{3}$ (d) None Ans : D
23.	If $\frac{x-a}{b} + \frac{x-b}{a} = \frac{b}{x-a} + \frac{a}{x-b}$ (a) $0, (a+b), (a-b)$ (b) $0, (a+b), a^2 + b^2 / a+b$ (c) $0, (a-b), \frac{a^2 + b^2}{a+b}$ (d) $\frac{a^2 + b^2}{a+b}$ Ans : B
24.	If $\frac{x-a^2-b^2}{c^2} + \frac{c^2}{x-a^2-b^2} = 2$ the value of is (a) $a^2 + b^2 + c^2$ (b) $a^2 - b^2 - c^2$ (c) $1/a^2 + b^2 + c^2$ (d) $-1/a^2 + b^2 + c^2$

	Ans: A
25.	Solving equation $(x - \frac{1}{x})^2 - 6(x + \frac{1}{x}) + 12 = 0$ (a) 0 (b) 1 (c) -1 (d) None Ans : B
26.	Solving equation $(x - \frac{1}{x})^2 - 10(x - \frac{1}{x}) + 24 = 0$ (a) 0 (b) 1 (c) -1 (d) $(2 \pm \sqrt{5}), (3 \pm \sqrt{10})$ Ans : D
27.	Solving equation $2(x - \frac{1}{x})^2 - 5(x + \frac{1}{x} + 2) + 18 = 0$ (a) 0 (b) 1 (c) -1 (d) $2, 1/2$ Ans : D
28.	If α, β are the roots of equation $x^2 - 5x + 6 = 0$ and $\alpha > \beta$ then the equation with roots $(\alpha + \beta)$ and $(\alpha - \beta)$ is (a) $x^2 - 6x + 5 = 0$ (b) $2x^2 - 6x + 5 = 0$ (c) $2x^2 - 5x + 6 = 0$ (d) $x^2 - 5x + 6 = 0$ Ans : A
29.	If α, β are the roots of equation $x^2 - 5x + 6 = 0$ and $\alpha > \beta$ then the equation with roots $(\alpha^2 + \beta)$ and $(\alpha + \beta^2)$ is (a) $x^2 - 9x + 99 = 0$ (b) $x^2 - 18x + 90 = 0$ (c) $x^2 - 18x + 77 = 0$ (d) none Ans : C
30.	If α, β are the roots of equation $x^2 - 5x + 6 = 0$ and $\alpha > \beta$ then the equation with roots $(\alpha\beta + \alpha + \beta)$ and $(\alpha\beta - \alpha - \beta)$ is (a) $x^2 - 12x + 11 = 0$ (b) $2x^2 - 6x + 12 = 0$ (c) $x^2 - 12x + 12 = 0$ (d) none Ans : A
31.	The condition that one of $ax^2 + bx + c = 0$ the roots of is twice the other is (a) $b^2 = 4ca$ (b) $2b^2 = 9(ca)$ (c) $2b^2 = 9ca$

	(d) $2b^2 = 9(c-a)$ Ans : C
32	The condition that one of $ax^2 + bx + c = 0$ the roots of is thrice the other is (a) $3b^2 = 16ca$ (b) $b^2 = 9ca$ (c) $3b^2 = -16ca$ (d) $b^2 = -9ca$ Ans : A
33	If the roots of $ax^2 + bx + c = 0$ are in the ratio p/q then the value of $\frac{b^2}{(ca)}$ is (a) $\frac{(p+q)^2}{(pq)}$ (b) $(p+q)/(pq)$ (c) $(p-q)^2/(pq)$ (d) $(p-q)/(pq)$ Ans : A
34	Solving $6x+5y-16=0$ and $3x-y-1=0$ we get values of x and y as (a) 1, 1 (b) 1, 2 (c) -1, 2 (d) 0, 2 Ans : B
35	Solving $x^2 + y^2 - 25 = 0$ and $x-y-1=0$ we get the roots as under (a) $\pm 3 \pm 4$ (b) $\pm 2 \pm 3$ (c) 0, 3, 4 (d) 0, -3, -4 Ans : A
36	Solving $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} - \frac{5}{2} = 0$ and $x + y - 5 = 0$ we get the roots as under (a) 1, 4 (b) 1, 2 (c) 1, 3 (d) 1, 5 Ans : A
37	Solving $\frac{1}{x^2} + \frac{1}{y^2} - 13 = 0$ and $\frac{1}{x} + \frac{1}{y} - 5 = 0$ we get the roots as under (a) $\frac{1}{8}, \frac{1}{5}$ (b) $\frac{1}{2}, \frac{1}{3}$ (c) $\frac{1}{13}, \frac{1}{5}$ (d) $\frac{1}{4}, \frac{1}{5}$ Ans : B
38	Solving $x^2 + xy - 21 = 0$ and $xy - 2y^2 + 20 = 0$ we get the roots as under (a) $\pm 1, \pm 2$

	(b) $\pm 2, \pm 3$ (c) $\pm 3, \pm 4$ (d) None Ans : C
39	Solving $x^2 + xy + y^2 = 37$ and $3xy + 2y^2 = 68$ we get the following roots (a) $\pm 3, \pm 4$ (b) $\pm 4, \pm 5$ (c) $\pm 2, \pm 3$ (d) None Ans : A
40	Solving $4^x \cdot 2^y = 128$ and $3^{3x+2y} = 9^{xy}$ we get the following roots (a) 7/4, 7/2 (b) 2, 3 (c) 1, 2 (d) 1, 3 Ans : A, B
41	Solving $9^x = 3^y$ and $5^{x+y+1} = 25^{xy}$ we get the following roots (a) 1, 2 (b) 0, 1 (c) 0, 3 (d) 1, 3 Ans : A
42	Solving $9x+3y-4z=3$, $x+y-z=0$ and $2x-5y-4z=-20$ following roots are obtained (a) 2, 3, 4 (b) 1, 3, 4 (c) 1, 2, 3 (d) None Ans : C
43	Solving $x+2y+2z=0$, $3x-4y+z=0$ and $x^2+3y^2+z^2=11$ following roots are obtained (a) 2, 1, -2 and -2, -1, 2 (b) 2, 1, 2 and -2, -1, -2 (c) only 2, 1, -2 (d) only -2, -1, 2 Ans : A
44	Solving $x^3 - 6x^2 + 11x - 6 = 0$ we get the following roots (a) -1, -2, 3 (b) 1, 2, -3 (c) 1, 2, 3 (d) -1, -2, -3 Ans : C
45	Solving $x^3 + 9x^2 - x - 9 = 0$ we get the following roots (a) $\pm 1, -9$ (b) $\pm 1, \pm 9$ (c) $\pm 1, 9$

	(d) None Ans : A [SM, MTP Nov 22]
46	It is being given that one of the roots is half the sum of the other two solving $x^3 - 12x^2 + 47x - 60 = 0$ we get the following roots: (a) 1, 2, 3 (b) 3, 4, 5 (c) 2, 3, 4 (d) -3, -4, -5 Ans : B
47	Solve $x^3 + 3x^2 - x - 3 = 0$ given that the roots are in arithmetical progression (a) -1, 1, 3 (b) 1, 2, 3 (c) -3, -1, 1 (d) -3, -2, -1 Ans : C
48	Solve $x^3 - 7x^2 + 14x - 8 = 0$ given that the roots are in geometrical progression (a) $\frac{1}{2}$, 1, 2 (b) 1, 2, 4 (c) $\frac{1}{2}$, -1, 2 (d) -1, 2, -4 Ans : B

49	Solve $x^3 - 6x^2 + 5x + 12 = 0$ given that the product of the two roots is 12 (a) 1, 3, 4 (b) -1, 3, 4 (c) 1, 6, 2 (d) 1, -6, -2 Ans : B
50	Solve $x^3 - 5x^2 - 2x + 24 = 0$ given that two of its roots being in the ratio of 3:4 (a) -2, 4, 3 (b) -1, 4, 3 (c) 2, 4, 3 (d) -2, -4, -3 Ans : A

RTP and MTP

1.	What should be added to $4x^2 + 4x$, so that it becomes perfect square? (a) 4 (b) 2 (c) 1 (d) $\frac{1}{2}$ Ans : C [MTP Jan 25]
2.	The sum of two numbers is 62 and their product is 960. The sum of their reciprocals is (a) 31/480 (b) 29/480 (c) 61/960 (d) 41/960 Ans : A [MTP Jan 25, May 20]
3.	The roots of the quadratic equation $x^2 - 4x + k = 0$ are coincident if (a) $k = 4$ (b) $k = 3$ (c) $k = 2$ (d) $k = 1$ Ans : A

	[MTP Jan 25, May 20]				
4.	The three roots of the cubic equation $x^3 + 9x^2 - x - 9 = 0$ is (a) -1, +1, and 9 (b) -1, +1 and -9 (c) -1, +1 and 1/9 (d) -1, +1 and 1/9 Ans : B [MTP Jan 25]				
5.	Given the quadratic equation $2x^{\frac{1}{3}} + 2x^{-\frac{1}{3}} = 5$. Its roots are (a) 2 and $\frac{1}{2}$ (b) 4 and $\frac{1}{4}$ (c) 8 and 1/8 (d) 16 and 1/16 Ans : C [MTP Jan 25]				
6.	X	5	6	7	8
	Y	11	13	15	17
In the above table corresponding values of two variable x and y have been given. Which of the following equations establishes the relationship between the two variables ?					

	(a) $y=3x+2$ (b) $y=2x-1$ (c) $y=2x+1$ (d) $y=3x+1$ Ans : (c) [MTP May 18, June 24]
7.	if α, β, γ are the roots of equation x^3-4x^2+x+6 then the equation roots are $\frac{1}{\alpha}, \frac{1}{\beta}$ and $\frac{1}{\gamma}$ is (a) $x^3-4x^2+x+6=0$ (b) $4x^3-6x^2+x-1=0$ (c) $6x^3+x^2-4x+1=0$ (d) $6x^3-x^2+4x-1=0$ Ans : (c) [MTP Nov 18]
8.	A number consist of three digit of which the middle one is zero and the sum of other digits is 9. The number formed by interchanging the first and third digits is more than the original number by 297 find the number? (a) 306 (b) 309 (c) 603 (d) 307 Ans : (a) [MTP Nov 18]
9.	The Solution of the 8 in equality $8x+6 < 12x+14$ is (a) $(-2, 2)$ (b) $(0, -2)$ (c) $(2, \infty)$ (d) $(-2, \infty)$ Ans : (d) [MTP Nov 18]
10.	The rules and representations demand that employed should employ not more than 8 expressed leads to 1 fresh one and then fact can be expressed as (a) $y \geq x/8$ (b) $8y \leq x$ (c) $8y = x$ (d) $y = 8x$ Ans : (a) [MTP Nov 18]
11.	on the average experienced person does 6 units work while A person 2 units of work daily but employer has to maintain as output of at least 24 units of per day. This situation can be expressed as (a) $6x + 2y \leq 24$

	(b) $6x+2y = 24$ (c) $6x+2y \geq 24$ (d) $6x+2y \neq 4$ Ans : (c) [MTP Nov 18]
12.	On the average, experienced person does 5 units of work while a fresh one 3 units of work daily, but the employer have to maintain the output at least 30 units of work per day. The situation can be expressed as (a) $5x+3y \leq 30$ (b) $5x+3y \geq 30$ (c) $5x+3y = 30$ (d) None of these Ans : (b) [MTP Nov 21, May 21(Similar)]
13.	In a two digits number; the digit in the ten's place is twice the digit in the unit's place. If 18 be subtracted from the number the digits are reversed. Find the number. (a) 63 (b) 21 (c) 42 (d) None of these Ans : c [MTP Dec 24]
14.	For a certain commodity the demand equation giving "y" units for a price "p" in rupees per unit is $y = 100(10 - p)$. The supply equation giving the supply z units for a price "p" in rupees per unit is $z = 75(p-3)$. The market price is such at which demand equals supply. Find the market price and quantity that will be brought and sold. (a) ₹ 7; 300 units (b) ₹ 8; 400 units (c) ₹ 5; 200 units (d) None Ans : a [MTP Dec 24]
15.	The age of a person is 8 years more than thrice the age of the sum of his two grandsons who were twins. After 8 years his age will be 10 years more than twice the sum of the ages of his grandsons. Then the age of the person when the twins were born is: (a) 86 years (b) 73 years (c) 68 years (d) 63 years Ans : b

	[MTP Dec 24]
16.	Roots of the equation $3x^2 - 14x - k = 0$ will be reciprocal of each other if: (a) $k = -3$ (b) $k = 0$ (c) $k = 3$ (d) $k = 14$ Ans : A [MTP Dec 24, May 21(Similar)]
17.	It roots of equation $x^2 + x + r = 0$ are 'a' and 'b' and $a^3 + b^3 = -6$. Find the value of 'r'? (a) $-5/3$ (b) $7/3$ (c) $-4/3$ (d) 1 Ans : A [MTP May 22, Dec 24]
18.	A lady travel at a speed of 20km/h and returned at quicker speed. If her average speed of the whole journey is 24km/h, find the speed of return journey (in km/h) (a) 25 (b) 30 (c) 35 (d) 38 Ans : B [MTP Dec 24]
19.	4 tables and 3 chairs together cost Rs. 2,250 and 3 tables and 4 chairs cost Rs. 1950. Find the cost of 2 chairs and 1 table. (a) Rs. 550 (b) Rs. 1005 (c) Rs. 750 (d) None of these Ans : (c) [MTP April 24]
20.	5 chairs and 3 tables cost of Rs.350. and 3 Chairs and 5 tables cost Rs.370. What is the cost of the table and two chairs? (a) Rs.130 (b) Rs. 120 (c) Rs.150 (d) Rs.140 Ans: (a) [MTP Nov 19]
21.	When two roots of quadratic equations are a and $1/\alpha$ then what will be quadratic equation (a) $a x^2 - (a^2 + 1) x + a = 0$ (b) $a x^2 - a^2 x + a = 0$

	(c) $a x^2 - (a^2 + 1) x + a = 0$ (d) none of these Ans. (a) [MTP May 19]
22.	If $2x - 3y = 1$ and $5x + 2y = 50$, then what is the value of $(x - 2y)$? (a) -2 (b) 6 (c) 7 (d) 10 Ans : (a) [MTP Nov 20]
23.	The cost of 5 mangoes is equal to the cost of 20 oranges. If the total cost 2 mangoes and 10 oranges is Rs 22.50, find the cost of two oranges (a) Rs 1.25 (b) Rs 2.50 (c) Rs 3 (d) Rs 3.50 Ans : (b) [MTP Nov 20]
24.	The roots of the quadratic equation $9x^2 + 3kx + 4 = 0$ are equal if (a) $k = \pm 2$ (b) $k = \pm 3$ (c) $k = \pm 4$ (d) $k = \pm 5$ Ans : (c) [MTP Nov 20]
25.	If one root of a equation is $2 + \sqrt{5}$, then the quadratic equation is (a) $x^2 + 4x - 1 = 0$ (b) $x^2 - 4x - 1 = 0$ (c) $x^2 + 4x + 1 = 0$ (d) $x^2 - 4x + 1 = 0$ Ans : (b) [MTP Nov 20]
26.	A man sells 6 radios and 4 televisions for Rs 18,480. If 14 radios and 2 televisions are sold for the same amount. What is the price of radio? (a) Rs 1848 (b) Rs 840 (c) Rs 1680 (d) Rs 3360 Ans : (b) [MTP Nov 20]
27.	The solution set of the equations $x + 2 > 0$ and $2x - 6 > 0$ is

	(a) $(-2, \infty)$ (b) $(3, \infty)$ (c) $(-\infty, -2)$ (d) $(-\infty, -3)$ Ans : (b) [MTP Nov 20, Nov 19]
28.	If one root of the equation $x^2 - 3x + k = 0$ is 2, then value of k will be (a) -10 (b) 0 (c) 2 (d) 10 Ans : (c) [MTP May 21]
29.	If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is _____ (a) $x^2 - 16x - 25 = 0$ (b) $x^2 - 16x + 25 = 0$ (c) $x^2 + 16x + 25 = 0$ (d) None of these Ans : (b) [MTP 1 and 2, May 21, RTP May 25]
30.	The roots of the equation $x^3 + x^2 - 20x = 0$ (a) 0, 4, 5 (b) 0, -4, 5 (c) 0, 4, -5 (d) 0, -4, -5 Ans : (c) [MTP Nov 18]
31.	Find the quadratic equation Sum of whose roots is 3 and the Sum of the cubes of roots is 7 (a) $21x^2 - 147x + 20 = 0$ (b) $21x^2 + 147x + 20 = 0$ (c) $21x^2 - 147x - 20 = 0$ (d) $-21x^2 - 147x + 20 = 0$ Ans : (a) [MTP Nov 18]
32.	Find the quadratic equation given that $5 + \sqrt{3}$ is one root (a) $x^2 - 10x + 22 = 0$ (b) $x^2 + 10x - 22 = 0$ (c) $x^2 - 10x - 22 = 0$ (d) $-x^2 - 10x + 22 = 0$ Ans : (a) [MTP Nov 18]
33.	If α and β are the roots of the equation $3x^2 - 5x + 3 = 0$ then the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$ is

	(a) $7/9$ (b) $-7/9$ (c) $8/9$ (d) $-8/9$ Ans : (a) [MTP Nov 18]
34.	If one root of the quadratic equation is $2 + \sqrt{3}$, the equation is _____ (a) $x^2 - 4x + 1 = 0$ (b) $x^2 + 4x + 1 = 0$ (c) $x^2 - 4x - 1 = 0$ (d) none of these Ans : (a) [MTP Nov 19, Nov 21]
35.	If thrice of A's age 6 years ago be subtracted from twice his present age, the result would be equal to his present age. Find A's Age (a) 9 (b) 8 (c) 10 (d) 12 Ans : (a) [MTP Nov 19, April 23]
36.	Given the Quadratic Equation $\frac{x+1}{x} - \frac{x}{x+1} = \frac{3}{2}$ (a) 1 and $-2/3$ (b) -1 and $2/3$ (c) -1 and $-2/3$ (d) 1 and $2/3$ Ans : (a) [MTP Nov 21]
37.	A dealer has only ₹ 5760 to invest in fans (x) and sewing machines (y). The cost per unit of fan and sewing machine is ₹360 and ₹ 240 respectively. This can be shown by: (a) $360x + 240y \geq 5760$ (b) $360x + 240y \leq 5760$ (c) $360x + 240y = 5760$ (d) none of these Ans : (b) [MTP Nov 21]
38.	The roots of equation $9^{x+2} - 6.3^{x+1} + 1 = 0$ are (a) -2 (b) 2 (c) $\sqrt{2}$ (d) 0 Ans : (a) [MTP Nov 21]
39.	The roots of equation $X^2 - X + 1 = 0$ Are (a) Imaginary and unequal (b) Real and unequal

	(c) Real and equal (d) Imaginary and equal Ans : (a) [MTP Nov 21]
40.	If $\sqrt{1 + \frac{25}{144}} = 1 + \frac{x}{12}$, then x is (a) 1 (b) 2 (c) 3 (d) 0 Ans : (a) [MTP Nov 21]
41.	Let α and β be the roots of equation $x^2 + 7x + 12 = 0$. Then the value of $\left(\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}\right)$ will be (a) $\left(\frac{49}{144} + \frac{144}{49}\right)$ (b) $\left(\frac{7}{12} + \frac{12}{7}\right)$ (c) $\left(-\frac{91}{12}\right)$ (d) none of these Ans. (c) [MTP May 19]
42.	If one root of the equation $x^2 + 7x + p = 0$ be reciprocal of the other then the value of p is _____. (a) 1 (b) -1 (c) 7 (d) -7 Ans : (a) [MTP May 19]
43.	Roots of the equation $2x^2 + 3x + 7 = 0$ are α and β then the value of $\alpha^{-1} + \beta^{-1}$ is (a) 2 (b) $\frac{3}{7}$ (c) $\frac{7}{2}$ (d) $-\frac{19}{14}$ Ans : (d) [MTP May 22, RTP May 25]
44.	If α and β are the roots of the equation $x^2 + 7x + 12 = 0$, then the equation whose roots $(\alpha + \beta)^2$ and $(\alpha - \beta)^2$ will be: (a) $x^2 - 14x + 49 = 0$ (b) $x^2 - 24x + 144 = 0$ (c) $x^2 - 50x + 49 = 0$ (d) $x^2 - 19x + 144 = 0$ Ans : (c) [MTP May 22, Nov 21, RTP Sep 24]
45.	If the ratio of the roots of the equation $4x^2 - 6x + p = 0$ is 1:2 then the value of p is: (a) 1

	(b) 2 (c) -2 (d) -1 Ans : (b) [MTP May 22, Nov 23]
46.	If $2^{x+y} = 2^{x-y} = \sqrt{8}$ then the respective values of x and y are ____ (a) $1, \frac{1}{2}$ (b) $\frac{1}{2}, 1$ (c) $\frac{1}{2}, \frac{1}{2}$ (d) None of these Ans : 1 [MTP May 22]
47.	If $a^2 + b^2 = 45$ and $ab = 18$, the $\frac{1}{a} + \frac{1}{b}$ is (a) $\pm \frac{1}{3}$ (b) $\pm \frac{2}{3}$ (c) $\pm \frac{1}{2}$ (d) None of these Ans : 3 [MTP May 22]
48.	$(x + 4)$ is a factor of $x^4 + 4x^3 - ax^2 - bx + 24$. Also, $a + b = 29$. Find the value of b. (a) 7 (b) 16 (c) 22 (d) 13 Ans : (c) [MTP Nov 21]
49.	X and Y have their present ages in the ratio 6:7. 14 years ago, the ratio of the ages of the two was 4:5. What will be the ratio of their ages 21 years from now? (a) 7: 11 (b) 9: 10 (c) 8: 11 (d) 11: 13 Ans : (b) [MTP Nov 21]
50.	The equation $3x^2 + mx + n = 0$ has roots that are double that of the equation $x^2 + 10x + 12 = 0$. What is the value of $m + n$? (a) 104 (b) 204 (c) 102 (d) 202 Ans : (b) [MTP Nov 21]
51.	The cost prices of 3 pens and 4 bags is Rs. 324. and 4 pens and 3 bags is Rs. 257, then cost price of 1 pen is equal to

	(a) Rs. 16 (b) Rs. 18 (c) Rs. 50 (d) Rs. 75 Ans : D [MTP April 23]
52.	If $3x+2 \times 2x+5$ and $4x-5 \geq 2x-3$, then x can take from the following values (a) 3 (b) -1 (c) 2 (d) -3 Ans : C [MTP April 23, Nov 23]
53.	If the roots of $(k-4)x^2-2kx+(k+5)=0$ are coincident. Then the value of k? (a) 14 (b) 20 (c) 18 (d) 22 Ans : B [MTP April 23]
54.	If one root of the quadratic equation is $2-\sqrt{3}$ from the equation given that the roots are irrational. Then find the Quadratic equation. (a) $x^2-4x+1=0$ (b) $x^2+4x-1=0$ (c) $x^2-4x-1=0$ (d) $x^2+4x+1=0$ Ans: A [MTP April 23]
55.	One root of the equation: $x^2 - 2(5 + m) + 3(7 + m) = 0$ is reciprocal of the other. Find the value of m. (a) -20/3 (b) 7 (c) 1/7 (d) 117 Ans: (a) [MTP April 24]
56.	The ages of two persons are in the ratio 5:7. Eighteen years ago their ages were in the ratio of 8:13, their present ages (in years) are : (a) 50,70 (b) 70,50 (c) 40,56 (d) None of these Ans : (a) [MTP April 24]
57.	A box contains Rs. 56 in the form of coins of

	one rupee, 50 paise and 25 paise. The number of 50 paise coin is double the number of 25 paise coins and four times the numbers of one rupee coins. The numbers of 50 paise coins in the box is (a) 64 (b) 32 (c) 16 (d) 14 Ans : (a) [MTP April 24]
58.	A man starts his job with a certain monthly salary and earns a fixed increment every year. If his salary was Rs. 1,500 after 4 years of service and Rs. 1,800 after 10 years of service, what was his starting salary and what is the annual increment in rupees? (a) Rs. 1,300, Rs. 50 (b) Rs. 1,100, Rs. 50 (c) Rs. 1,500, Rs. 30 (d) None Ans : (a) [MTP Dec 23, April 24]
59.	Find the positive value of k for which the equations: $x^2 + kx + 64 = 0$ and $x^2 - 8x + k = 0$ will have real roots: (a) 12 (b) 16 (c) 18 (d) 22 Ans : (b) [MTP April 24]
60.	If $p/q = -2/3$, then the value of $\frac{2p+q}{2p-q}$ is: (a) 1 (b) -1/7 (c) 1/7 (d) 7 Ans: (c) [MTP May 21, Nov 22, RTP May 25]
61.	The value of y of fraction x/y exceeds with x by 5 and if 3 be added to both the fraction becomes 3. Find the fraction, (a) 12/17 (b) 13/17 (c) - 1/3 (d) None of these Answer (a) [MTP June 23]
62.	Solve for x, y and z. $\frac{xy}{y-x} = 210, \frac{xz}{z-x} = 140, \frac{yz}{y+z} = 140$

	(a) 105,210,420 (b) 100, 205, 400 (c) 95, 215, 395 (d) None of these Ans: (a) [MTP June 23]
63.	If difference between a number and its positive square root is 12; the numbers are (a) 9 (b) 16 (c) 25 (d) None of these Answer (b) [MTP June 23]
64.	The cab bill is partly fixed and partly varies on the distance covered. For 456 km the bill is Rs. 8252, for 484 km the bill is Rs. 8728. What will the bill be for 500km? (a) Rs. 8876 (b) Rs.9156 (c) Rs.9472 (d) Rs.9000 Ans : (d) [MTP Nov 21]
65.	What is the smallest integral value of n for which $n^3 + 7n^2 - 50n - 336 > 0$ (a) 8 (b) 6 (c) 7 (d) None of the above Ans : (d) [MTP Nov 21]
66.	If one root is $5z^2 + 13z + y = 0$ be reciprocal of the other then the value of y is (a) 1/5 (b) -1/5 (c) 5 (d) -5 Ans: (C) [MTP Nov 22]
67.	A man wants to cut three lengths from a single piece of board of length 91 cm. The Second length is to be 3 cm longer than the shortest and third length is to be twice as the shortest. What is the possible length for the shortest piece? (a) 22 (b) 20 (c) 15 (d) 18

	Ans : (a) [MTP Nov 22]
68.	What is the value of $\frac{p+q}{p-q}$ if $\frac{p}{q} = 7$ (a) 2/3 (b) 4/3 (c) 2/6 (d) 7/8 Ans : (b) [MTP July 24]
69.	If $2x+y = 2x-y = \sqrt{8}$, then the value of x and y are (a) $1, \frac{1}{2}$ (b) $\frac{1}{2}, 1$ (c) $\frac{1}{2}, \frac{1}{2}$ (d) none of these Ans : (a) [MTP July 24]
70.	The equation $x^3 - 3x^2 - 4x + 12 = 0$ has three real roots, they are: (a) -2, 2, 3 (b) -2, -2, 3 (c) 2, -2, -3 (d) -2, 2, -3 Ans : (a) [MTP July 24]
71.	If the ratio of the roots of the Equation $4x^2 - 6x + p = 0$ is 1:2 then the value of p is: (a) 1 (b) 2 (c) -2 (d) -1 Ans : (c) [MTP July 24]
72.	If $x = 2 + \sqrt{3}$ and $y = 2 - \sqrt{3}$ then value of $x^2 + y^2 =$ (a) 14 (b) 4 (c) 2 (d) 6 Ans : (a) [MTP Dec 23, July 24]
73.	The roots of the equation $x^2 - 7x + 10 = 0$ are: (a) -2 and -5 (b) 2 and 5 (c) 2 and -5 (d) -2 and 5 Ans : (a) [MTP July 24]
74.	If α and β are roots of the equation $x^2 - 8x + 12 = 0$ then $1/\alpha + 1/\beta =$

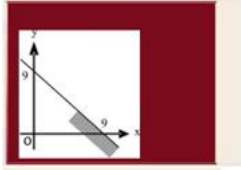
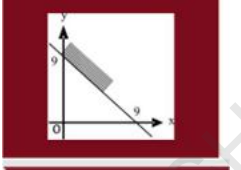
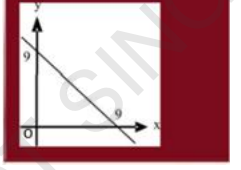
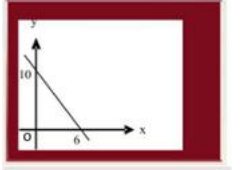
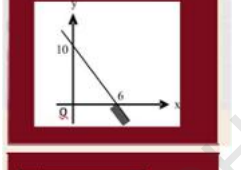
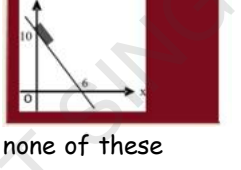
	(a) $\frac{2}{3}$ (b) $\frac{2}{4}$ (c) $\frac{3}{4}$ (d) $\frac{4}{5}$ Ans : (a) [MTP July 24]
75.	$\frac{2x+5}{10} + \frac{3x+10}{15} = 5$, then value of x (a) 10.58 (b) 9.58 (c) 9.5 (d) None of these Ans : (b) [MTP Nov 22]
76.	Find value of $x^2 - 10x + 1$, if $x = \frac{1}{5-2\sqrt{6}}$ (a) 25 (b) 1 (c) 0 (d) 49 Ans : (c) [MTP Nov 22]
77.	Find the value of k in $3x^2 - 2kx + 5 = 0$, if $x = 2$. (a) $\frac{17}{4}$ (b) $-\frac{7}{14}$ (c) $\frac{4}{17}$ (d) $-\frac{4}{17}$ Ans : (a) [MTP Nov 22]
78.	The sum of two numbers is 75 and their

	difference is 20. Find the difference of their squares. (a) 1500 (b) 1600 (c) 1550 (d) None of these Ans : (a) [MTP May 24]
79.	The roots of the cubic equation $x^3 - 7x + 6 = 0$ are: (a) 1, 2 and 3 (b) 1, -2 and 3 (c) 1, 2 and -3 (d) 1, -2 and -3 Ans : C [MTP Dec 23]
80.	

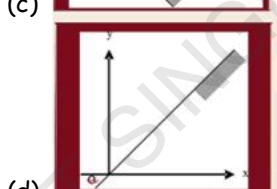
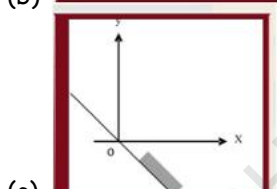
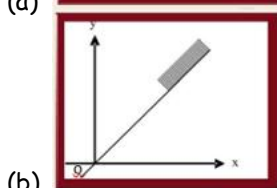
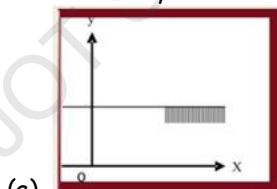
CHAPTER 3: LINEAR INEQUALITIES

Exercise 1(A)

1.	An employer recruits experienced (x) and fresh workmen (y) for his firm under the condition that he cannot employ more than 9 people. x and y can be related by the inequality
(i)	(a) $x + y \neq 9$ (b) $x + y \leq 9$ $x \geq 0, y \geq 0$ (c) $x + y \geq 9$ $x \geq 0, y \geq 0$ (d) none of these Ans : B [SM, MTP Nov 18, May 22]
(ii)	On the average experienced person does 5 units of work while a fresh one 3 units of work daily but the employer has to maintain an output of at least 30 units of work per day. This situation can be expressed as (a) $5x + 3y \leq 30$ (b) $5x + 3y > 30$ (c) $5x + 3y \geq 30$ $x \geq 0, y \geq 0$ (d) none of these Ans : C [SM, MTP Jan 25, May 20, May 21, Dec 23]
(iii)	The rules and regulations demand that the employer should employ not more than 5 experienced hands to 1 fresh one and this fact can be expressed as (a) $y \geq x/5$ (b) $5y \leq x$ (c) $5y > x$ (d) none of these Ans : A [SM, MTP May 22, RTP Sep 24]
(iv)	The union however forbids him to employ less than 2 experienced person to each fresh person. This situation can be expressed as (a) $x \leq y/2$ (b) $y \leq x/2$ (c) $y \geq x/2$ (d) $x > 2y$ Ans : B

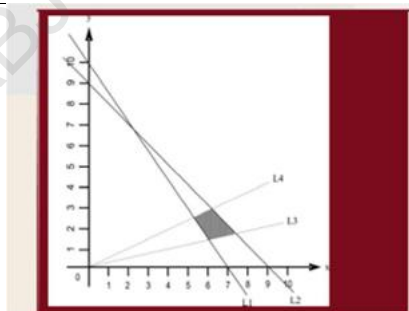
(v)	The graph to express the inequality $x + y \leq 9$ is (a)  (b)  (c)  (d) none of these Ans : A
(vi)	The graph to express the inequality $5x + 3y \geq 30$ is (a)  (b)  (c)  (d) none of these Ans : C

- (vii) The graph to express the inequality $y \leq (1/2)x$ is indicated by



Ans: D

- (viii)



L1 : $5x + 3y = 30$ L2 : $x + y = 9$ L3 : $y = x/3$
 L4 : $y = x/2$

The common region (shaded part) shown in the diagram refers to

- (a) $5x + 3y \leq 30$
 $x + y \leq 9$
 $y \leq 1/5x$
 $y \leq x/2$

- (b) $5x + 3y \geq 30$
 $x + y \leq 9$
 $y \geq x/3$
 $y \leq x/2$
 $y \geq 0, x \geq 0$

- (c) $5x + 3y \geq 30$
 $x + y \leq 9$
 $y \leq x/3$

- $y \geq x/2$
 $y \geq 0, x \geq 0$
 (d) $5x + 3y > 30$
 $x + y < 9$
 $y \geq 9$
 $y \leq x/2$
 $y \geq 0, x \geq 0$

- (e) None of these

Ans: B

2. A dietitian wishes to mix together two kinds of food so that the vitamin content of the mixture is at least 9 units of vitamin A, 7 units of vitamin B, 10 units of vitamin C and 12 units of vitamin D. The vitamin content per Kg. of each food is shown below:

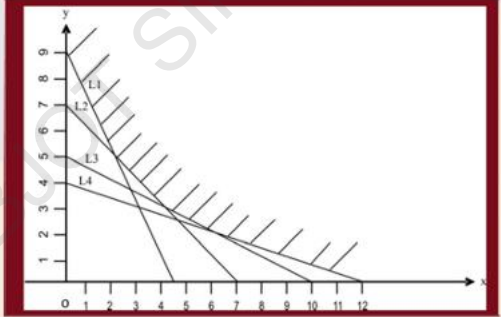
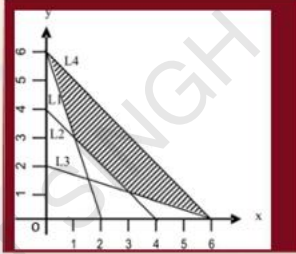
	A	B	C	D
Food I:	2	1	1	2
Food II:	1	1	2	3

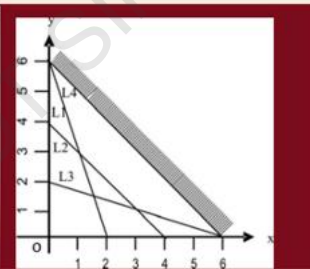
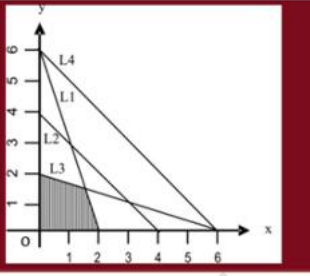
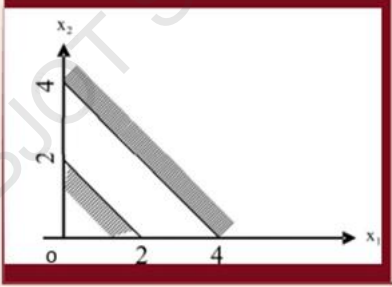
Assuming x units of food I is to be mixed with y units of food II the situation can be expressed as

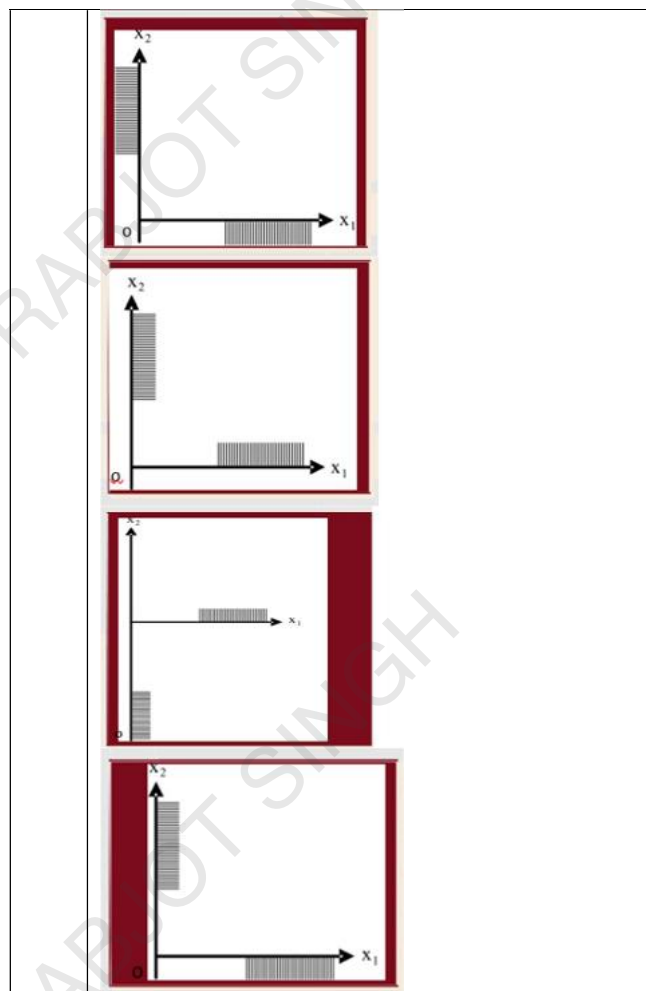
- (a) $2x + y \leq 9$
 $x + y \leq 7$
 $x + 2y \leq 10$
 $2x + 3y \leq 12$
 $x > 0, y > 0$
 (b) $2x + y \geq 30$
 $x + y \leq 7$
 $x + 2y \geq 10$
 $x + 3y \geq 12$
 (c) $2x + y \geq 9$
 $x + y \geq 7$
 $x + y \leq 10$
 $x + 3y \geq 12$
 (d) $2x + y \geq 9$
 $x + y \geq 7$
 $x + 2y \geq 10$
 $2x + 3y \geq 12$
 $x \geq 0, y \geq 0$

Ans: D

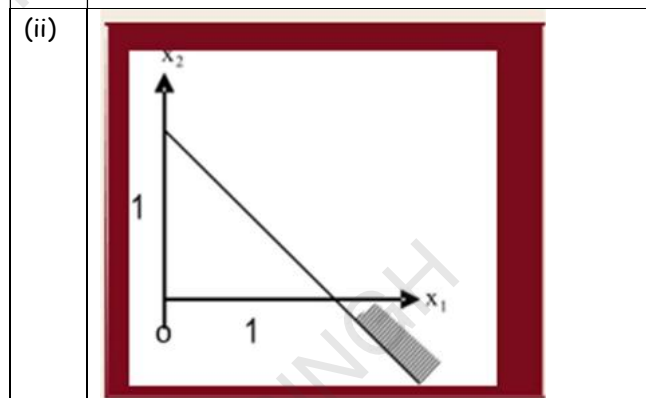
3. Graphs of the inequations are drawn below :

	 $L1 : 2x + y = 9$ $L2 : x + y = 7$ $L3 : x + 2y = 10$ $L4 : x + 3y = 12$ The common region (shaded part) indicated on the diagram is expressed by the set of inequalities (a) $2x + y \leq 9$ $x + y \geq 7$ $x + 2y \geq 10$ $x + 3y \geq 12$ (b) $2x + y \geq 9$ $x + y \leq 7$ $x + 2y \geq 10$ $x + 3y \geq 12$ (c) $2x + y \geq 9$ $x + y \geq 7$ $x + 2y \geq 10$ $x + 3y \geq 12$ $x \geq 0, y \geq 0$ (d) none of these Ans : C
4.	The common region satisfied by the inequalities $L1: 3x + y \geq 6$, $L2: x + y \geq 4$, $L3: x + 3y \geq 6$, and $L4: x + y \leq 6$ is indicated by  (a)

	 (b)  (c) (d) none of these Ans : A
5.	The region indicated by the shading in the graph is expressed by inequalities  (a) $x_1 + x_2 \leq 2$ $2x_1 + 2x_2 \geq 8$ $x_1 \geq 0, x_2 \geq 0,$ (b) $x_1 + x_2 \leq 2$ $x_2 \leq x_1 + x_2 \leq 4$ (c) $x_1 + x_2 \geq 2$ $2x_1 + 2x_2 \geq 8$ (d) $x_1 + x_2 \leq 2$ $2x_1 + 2x_2 > 8$ Ans : A
6.(i)	The inequalities $x_1 \geq 0, x_2 \geq 0$, are represented by one of the graphs shown below:



Ans : B

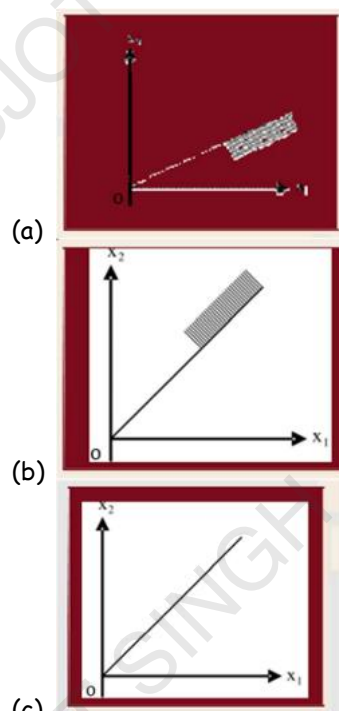


The region is expressed as

- (a) $x_1 - x_2 \geq 1$
- (b) $x_1 + x_2 \leq 1$
- (c) $x_1 + x_2 \geq 1$
- (d) none of these

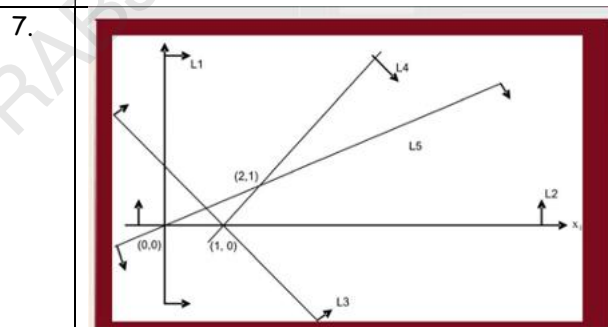
Ans : C

(iii) The inequality $-x_1 + 2x_2 \leq 0$ is indicated on the graph as



- (c)
- (d) none of these

Ans : A



The common region indicated on the graph is expressed by the set of five inequalities

- (a) $L_1 : x_1 \geq 0$
 $L_2 : x_2 \geq 0$
 $L_3 : x_1 + x_2 \leq 1$
 $L_4 : x_1 - x_2 \geq 1$
 $L_5 : -x_1 + 2x_2 \leq 0$
- (b) $L_1 : x_1 \geq 0$
 $L_2 : x_2 \geq 0$
 $L_3 : x_1 + x_2 \geq 1$
 $L_4 : x_1 - x_2 \geq 1$
 $L_5 : -x_1 + 2x_2 \leq 0$

	(c) $L1 : x_1 \leq 0$ $L2 : x_2 \leq 0$ $L3 : x_1 + x_2 \geq 1$ $L4 : x_1 - x_2 \geq 1$ $L5 :- x_1 + 2x_2 \leq 0$ (d) None of these Ans : B																
8.	A firm makes two types of products : Type A and Type B. The profit on product A is ` 20 each and that on product B is ` 30 each. Both types are processed on three machines M1, M2 and M3. The time required in hours by each product and total time available in hours per week on each machine are as follows: <table><tr><th>Machine</th><th>Product A</th><th>Product B</th><th>Available Time</th></tr><tr><td>M1</td><td>3</td><td>3</td><td>36</td></tr><tr><td>M2</td><td>5</td><td>2</td><td>50</td></tr><tr><td>M3</td><td>2</td><td>6</td><td>60</td></tr></table> The constraints can be formulated taking x_1 = number of units A and x_2 = number of unit of B as (a) $x_1 + x_2 \leq 12$ $5x_1 + 2x_2 \leq 50$ $2x_1 + 6x_2 \leq 60$ (b) $3x_1 + 3x_2 \geq 36$ $5x_1 + 2x_2 \leq 50$ $2x_1 + 6x_2 \geq 60$ $x_1 \geq 0, x_2 \geq 0$ (c) $3x_1 + 3x_2 \leq 36$ $5x_1 + 2x_2 \leq 50$ $2x_1 + 6x_2 \leq 60$ $x_1 \geq 0, x_2 \geq 0$ (d) none of these Ans : C	Machine	Product A	Product B	Available Time	M1	3	3	36	M2	5	2	50	M3	2	6	60
Machine	Product A	Product B	Available Time														
M1	3	3	36														
M2	5	2	50														
M3	2	6	60														
9.	The set of inequalities $L1: x_1 + x_2 \leq 12$, $L2: 5x_1 + 2x_2 \leq 50$, $L3: x_1 + 3x_2 \leq 30$, $x_1 \geq 0$, and $x_2 \geq 0$ is represented by																

(a)

(b)

(c)

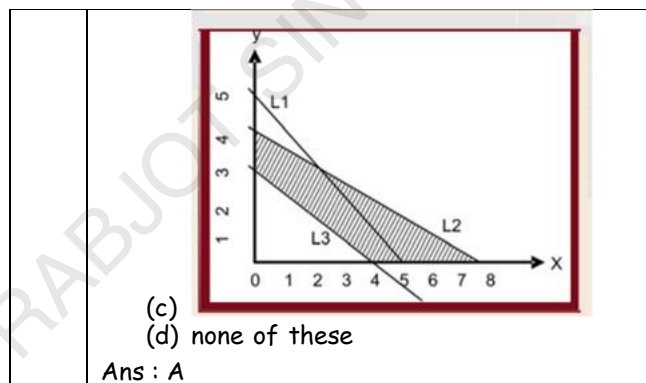
(d) none of these

Ans : B

10. The common region satisfying the set of inequalities $x \geq 0$, $y \geq 0$, $L1: x+y \leq 5$, $L2: x+2y \leq 8$ and $L3: 4x+3y \leq 12$ is indicated by

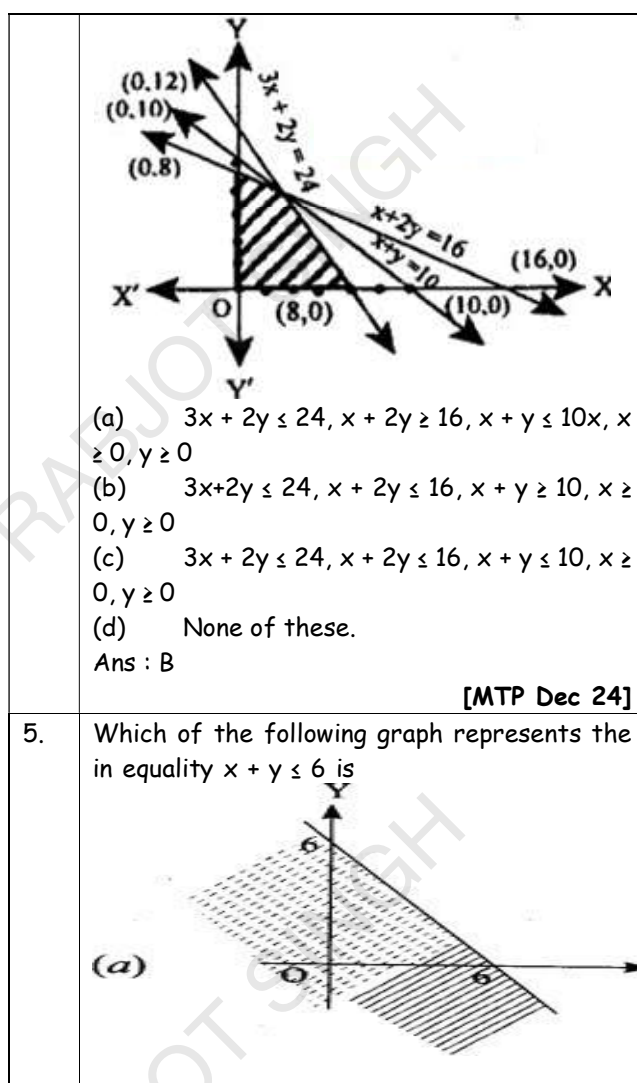
(a)

(b)

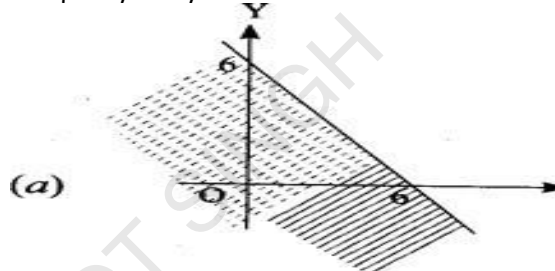


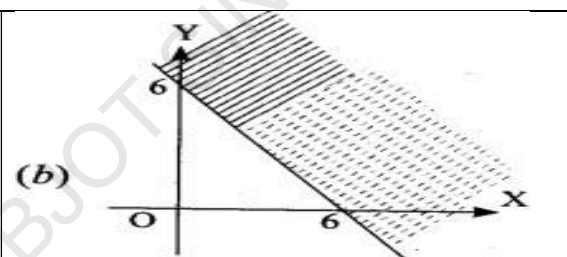
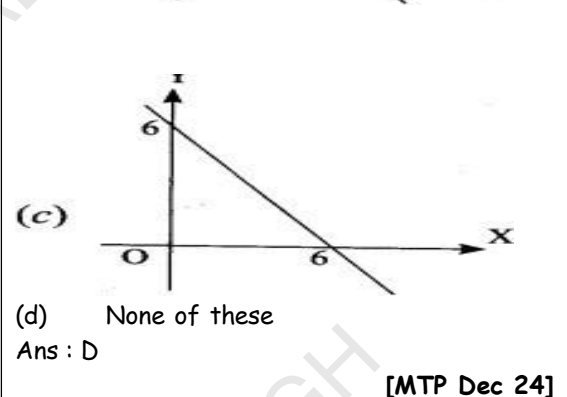
Additional Question Bank, RTP and MTP

1.	On solving the inequalities $2x + 5y \leq 20$, $3x + 2y \leq 12$, $x \geq 0$, $y \geq 0$, we get the following situation (a) (0, 0), (0, 4), (4, 0) and (20/11, 36/11) (b) (0, 0), (10, 0), (0, 6) and (20/11, 36/11) (c) (0, 0), (0, 4), (4, 0) and (2, 3) (d) (0, 0), (10, 0), (0, 6) and (2, 3) Ans : A [SM, MTP Jan 25, May 20]
2.	On solving the inequalities $6x + y \geq 18$, $x + 4y \geq 12$, $2x + y \geq 10$, we get the following situation (a) (0, 18), (12, 0), (4, 2) and (2, 6) (b) (3, 0), (0, 3), (4, 2) and (7, 6) (c) (5, 0), (0, 10), (4, 2) and (7, 6) (d) (0, 18), (12, 0), (4, 2), (0, 0) and (7, 6) Ans : A [MTP May 22, Nov 22, June 23]
3.	A manufacturer produces two items A and B. He has ₹10,000 to invest and a space to store 100 its ms. A table costs him ₹400 and a chair ₹100. Express this in the form of linear inequalities. (a) $x + y \leq 100$, $4x + y \leq 100$, $x \geq 0$, $y \geq 0$ (b) $x + y \leq 1000$, $2x + 5y < 1000$, $x \geq 0$, $y \geq 0$ (c) $x + y > 100$, $4x + y \geq 100$, $x \geq 0$, $y \geq 0$ (d) none of these Ans : (a) [MTP May 18, June 24, Nov 18]
4.	The shaded region represents

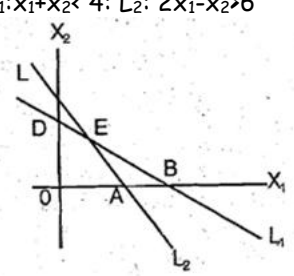


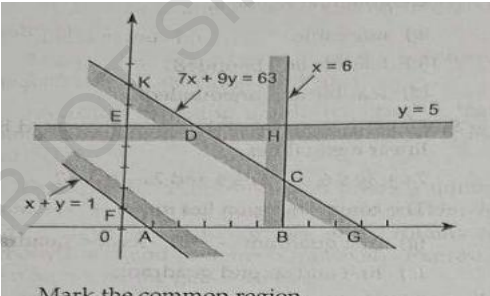
5. Which of the following graph represents the inequality $x + y \leq 6$ is



	 (b)  (c) (d) None of these Ans : D
6.	On solving the inequalities $5x + y \leq 100$, $x + y \leq 60$, $x \geq 0$ and $y \geq 0$, we get the following situation (a) (0, 0), (20, 0), (10, 50) and (0, 60) (b) (0, 0), (60, 0), (10, 50) and (0, 60) (c) (0, 0), (20, 0), (0, 100) and (10, 50) (d) none of these Ans. (a)
7.	The solution space of the inequalities $2x + y \leq 10$ and $x - y \leq 5$ (i) includes origin (ii) includes the point (4, 3) Which one is correct? (a) Only (i) (b) only (ii) (c) Both (I) and (ii) (d) None of these Ans : (a)
8.	A company produces two products A and B, each of which requires processing in two machines. The first machine can be used at most for 60 hours, the second machine can be used at most for 40 hours. The product A requires 2 hours on machine one and one hour on machine two. The product B requires one hour on machine one and two hours on machine two. Express above situation using linear

	inequalities (a) $2x + y \leq 60$ and $x + 2y \geq 40$ (b) $2x + y \geq 60$ and $x + 2y \geq 40$ (c) $2x + y \leq 60$ and $x + 2y \leq 40$. (d) $2x + y \geq 60$ and $x + 2y \leq 40$ Ans: (c)
9.	The point of intersection between the lines $3x + 4y = 7$ and $4x - y = 3$ lie in the (a) 1st quadrant. (b) 2nd quadrant. (c) 3rd quadrant. (d) 4th quadrant. Ans : (a)
10.	The point of Intersection between the straight lines $3x + 2y = 6$ and $3x - y = 12$ lie in (a) 1st quadrant (b) 2nd quadrant (c) 3rd quadrant (d) 4th quadrant Ans : (d)
11.	Mr. A plans to invest up to Rs. 30,000 in two stocks X and Y. Stock X(x) is priced at Rs.175 and Stock Y(y) at Rs.95 per share. This can be shown by (a) $175x + 95y < 30,000$ (b) $175x + 95y > 30,000$ (c) $175x + 95y = 30,000$ (d) None of these Ans : (a)
12.	Find the truth set of $3x - 6 < 3$ (a) $\{x : x < 5\}$ (b) $\{x : x > 5\}$ (c) $\{x : x < 3\}$ (d) $\{x : x \leq 3\}$ Ans : (c)
13.	Find the value of $\frac{x}{3} - \frac{1}{4}(x + 2) > 3x - 1\frac{1}{3}$ (a) $x < 2/7$ (b) $x > 2/7$ (c) $x < 3/7$ (d) $x > 4/7$ Ans : (a)
14.	The marginal cost function for production is $10 + 24x - 3x^2$. If the total cost of producing one unit is Rs. 25. Find the total cost function

	(a) $4+10x+12x^2-x^3$ (b) $4+10x-12x^2+x^3$ (c) $4+10x-12x^2-x^3$ (d) $4-10x-12x^2-x^3$ Ans : (c) [MTP Nov 18]
15.	The common region represented by the following in quantities $L_1: x_1+x_2 \leq 4$; $L_2: 2x_1-x_2 \geq 6$  (a) OABC (b) outside of OAB (c) $\triangle BCE$ (d) $\triangle ABE$ Ans : 4 [MTP May 22]
16.	A seller makes an offer of selling certain articles that can be described by the equation $x = 25 - 2y$ where x is price per unit and y denotes the No. of units. The cost price of the article is ₹ 10 per unit. The maximum quantity that can be offered in single deal to avoid loss is: (a) 6 (b) 7 (c) 8 (d) 9 Ans : b [MTP Dec 24]
17.	The cost function for the production of x units of a commodity is given by $C(x) = 2x^3 - 15x^2 + 36x + 15$, The cost will be minimum when 'x' equal to: (a) 3 (b) 2 (c) 1 (d) 4 Ans : B [MTP Nov 23, Dec 24]
18.	A small manufacturing firm produces two types of gadgets A and B, which are first processed in the foundry then sent to the machine shop for finishing. The number of man-hours of labour required in each shop for

	the production of each unit of A and B, and the number of man-hours the firm has available per week are as follows: <table><tr><th>Gadget</th><th>Foundry</th><th>Machine Shop</th></tr><tr><td>A</td><td>10</td><td>5</td></tr><tr><td>B</td><td>6</td><td>4</td></tr><tr><td>Firm's capacity per week</td><td>1000</td><td>600</td></tr></table> Let the firm manufactures x units of A and y units of B. The constraints are: (a) $10x+6y \leq 1000$, $5x+4y \leq 600$, $x \geq 0, y \leq 0$ (b) $10x+6y \leq 1000$, $5x+4y \leq 600$, $x \geq 0, y \geq 0$ (c) $10x+6y \geq 1000$, $5x+4y \leq 600$, $x \leq 0, y \leq 0$ (d) $10x+6y \leq 1000$, $5x+4y \geq 600$, $x \leq 0, y \leq 0$ Ans : (b) [MTP April 24]	Gadget	Foundry	Machine Shop	A	10	5	B	6	4	Firm's capacity per week	1000	600
Gadget	Foundry	Machine Shop											
A	10	5											
B	6	4											
Firm's capacity per week	1000	600											
19.	Graph of the following linear inequalities : $x+y \geq 1$, $y \leq 5$, $x \leq 6$, $7x+9y \leq 63$, $x \geq 0$, $y \geq 0$ is given below;  Mark the common region. (a) DCHAD (b) BCGB (c) ABCDEFA (d) EDKE Ans : (c) [MTP May 24]												
20.	The value of 'k' for system of equations $kx+2y = 5$ and $3x+y = 1$ has no solution is: (a) 5 (b) $2/3$ (c) 6 (d) $3/2$ Ans : (c) [MTP Nov 21]												
21.	The time required to produce a unit of product A is 3 hours and that for product B is 5 hours. The total available time is 220 hours. If x and y are the number of units of A and B that are produced then (a) $3x+2y = 220$ (b) $3x+5y \geq 220$, $x \geq 0$, $y \geq 0$												

	(c) $3x+5y \leq 220, x \geq 0, y \geq 0$ (d) $5x+2y \geq 220, x \geq 0, y \geq 0$ Ans : (c) [MTP Nov 22]
22.	A labour can be paid under two methods of given below : (i) ₹600 fixed and ₹50 per hour (ii) ₹170 per hour If a labour job work takes 'r' hours to complete, find out the value of r for which the method (ii) gives the labour gets the better wages. (a) $x = 6$ (b) $x = 4$ (c) $x = 3$ (d) $x = 2$ Ans : (a) [MTP Nov 22]
23.	If $2x+5 > 3x+2$ and $2x-3 \leq 4x-5$, then 'x' can take which of the following value? (a) 4 (b) -4 (c) 2 (d) 2 Ans: (c) [RTP Jan 25, MTP July 24]
24.	Marginal cost and marginal revenue of a

	commodity is $C'(x)=8+6x$ and $R'(x)=30$. Fixed cost is 0. Find the total profit. (a) $22x + 3x^2$ (b) $22x - 3x^2$ (c) $22x - x^2$ (d) $x + 3x^2$ Ans: (b) [RTP Jan 25]
25.	Solve for x of the Inequalities $2 \leq \frac{3x-2}{5} \leq 4$ where $x \in \mathbb{N}$ (a) {5,6,7} (b) {3,4,5,6} (c) {4,5,6} (d) {4,5,6,7} Ans : (d) [MTP July 24, Nov 23]
26.	The equation of the curve which passes through the point (1,2) and has the slope $3x - 4$ and the point of (x, y) is (a) $2y = 3x^2 - 8x + 9$ (b) $y = 6x^2 - 8x + 9$ (c) $y = x^2 - 8x + 9$ (d) $2y = 3x^2 - 8x + c$ Ans : D [MTP Nov 23]
27.	

Chapter 4: Mathematics of Finance

Exercise 4(A)

1.	S.I on Rs. 3,500 for 3 years at 12% p.a. is (a) Rs. 1,200 (b) Rs. 1,260 (c) Rs. 2,260 (d) none of these Ans: (c)
2.	$P = 5000$, $R = 15$, $T = 4\frac{1}{2}$ using $I = \frac{PRT}{100}$ I will be (a) Rs. 3,375 (b) Rs. 3,300 (c) Rs. 3,735 (d) none of these Ans: (a)
3.	If $P = 5000$, $T = 1$, $I = \text{Rs. } 300$, R will be (a) 5% (b) 4% (c) 6% (d) none of these Ans: (c)
4.	If $P = \text{Rs. } 4,500$, $A = \text{Rs. } 7,200$, than Simple interest i.e. I will be (a) Rs. 2,000 (b) Rs. 3,000 (c) Rs. 2,500 (d) Rs. 2,700 Ans: (d)
5.	$P = \text{Rs. } 12,000$, $A = \text{Rs. } 16,500$, $T = 2\frac{1}{2}$ years. Rate percent per annum simple interest will be (a) 15% (b) 12% (c) 10% (d) none of these Ans: (a)
6.	$P = \text{Rs. } 10,000$, $I = \text{Rs. } 2,500$, $R = 12\frac{1}{2}\%$ SI The number of years T will be (a) $1\frac{1}{2}$ years (b) 2 years (c) 3 years (d) none of these Ans: (b)
7.	$P = \text{Rs. } 8,500$, $A = \text{Rs. } 10,200$, $R = 12\frac{1}{2}\%$ * SI † will be.

	(a) 1 yr. 7 mth (b) 2 yrs. (c) $1\frac{1}{2}$ yr (d) none of these Ans: (a)
8.	The sum required to earn a monthly interest of Rs. 1,200 at 18% per annum SI is (a) 50,000 (b) 60,000 (c) 80,000 (d) none of these Ans: (c) [SM, MTP Nov 21, Nov 23, July 24]
9.	A sum of money amount to 6,200 in 2 years and 7,400 in 3 years. The principal and rate of interest are (a) 3,800, 31.58 % (b) 3,000, 20% (c) 3,500, 15% (d) none of these Ans: (a) [SM, MTP Nov 21]
10.	A sum of money doubles itself in 10 years. The number of years it would triple itself is (a) 25 years (b) 15 years. (c) 20 years (d) none of these Ans: (c) [SM, MTP Nov 21, Nov 18, May 21, RTP May 25]
11.	A certain money doubles itself in 10 years when deposited on simple interest. It would triple itself in (a) 30 years (b) 20 years (c) 25 years (d) 15 years Ans: (b) [MTP May 19]
12.	12. A sum of money placed at compound interest double itself in 3 years. In how many years will it amount

	to eight times itself? (a) 5 years (b) 9 years (c) 8 years (d) 7 years Ans : (b) [MTP Nov 18]
13.	Simple interest on Rs.3500 for 3 years at 12% per annum is (a) Rs. 1200 (b) Rs. 1260 (c) Rs. 2260 (d) Rs. 2000

	Ans : (b) [MTP May 19]
14.	A person deposited a sum of Rs. 10,000 in a bank. After 2 years, he withdrew Rs. 4,000 and at the end of 5 years, he received an amount of Rs. 7,900; then the rate of simple interest is (a) 0.06 (b) 0.05 (c) 0.1 (d) None of these Ans: (b) [MTP Nov 19]

EXERCISE 4B

1.	If $P = \text{Rs. } 1,000$, $R = 5\%$ p.a, $n = 4$; What is Amount and C.I. is (a) Rs. 1,215.50, Rs. 215.50 (b) Rs. 1,125, Rs. 125 (c) Rs. 2,115, Rs. 115 (d) none of these Ans: (a)
2.	Rs. 100 will become after 20 years at 5% p.a compound interest of (a) Rs. 250 (b) Rs. 205 (c) Rs. 165.33 (d) none of these Ans: (c)
3.	The effective rate of interest corresponding to a nominal rate 3% p.a payable half yearly is (a) 3.2% p.a (b) 3.25% p.a (c) 3.0225% p.a (d) none of these Ans: (c) [SM, MTP Jan 25, May 20, Nov 21]
4.	A machine is depreciated at the rate of 20% on reducing balance. The original cost of the machine was 1,00,000 and its ultimate scrap value was 30,000. The effective life of the machine is (a) 4.5 years (appx.) (b) 5.4 years (appx.) (c) 5 years (appx.) (d) none of these Ans: (b) [SM, MTP Nov 18]

5.	If A Rs. 1,000, $n = 2$ years, $R = 6\%$ p.a compound interest payable half-yearly, then principal (P) is (a) Rs. 888.50 (b) Rs. 885 (c) Rs. 800 (d) none of these Ans: (a)
6.	The population of a town increases every year by 2% of the population at the beginning of doves that year. The number of years by which the total increase of population be 40% is (a) 7 years (b) 10 years (c) 17 years (appx.) (d) none of these Ans: (c) [SM, MTP May 19, Nov 23, July 24]
7.	The difference between C.I and S.I on a certain sum of money invested for 3 years at 6% p.a is Rs. 110.16. The principle is (a) Rs. 3,000 (b) Rs. 3,700 (c) Rs. 12,000 (d) Rs. 10,000 Ans: (d) [SM, MTP May 19]
8.	The useful life of a machine is estimated to be 10 years and cost Rs. 10,000. Rate of depreciation is 10% p.a. The scrap value at the end of its life is (a) Rs. 3,486.78 (b) Rs. 4,383

	(c) Rs. 3,400 (d) none of these Ans: (a)
9.	The effective rate of interest corresponding a nominal rate of 7% p.a convertible quarterly is (a) 7% (b) 7.5% (c) 5% (d) 7.18% Ans: (d) [SM, MTP Nov 20]
10.	The C.I on 16000 for $1\frac{1}{2}$ years at 10% p.a payable half-yearly is (a) 2,222 (b) 2,522 (c) 2,500 (d) none of these Ans: (b)
11.	The C.I on Rs. 40000 at 10% p.a for 1 year when the interest is payable quarterly is (a) 4,000 (b) 4,100 (c) 4,152.51 (d) none of these Ans: (c)
12.	The difference between the S.I and the C.I on 2,400 for 2 years at 5% p.a is (a) Rs. 5 (b) Rs. 10 (c) Rs. 16 (d) Rs. 6 Ans: (d)
13.	The annual birth and death rates per 1,000 are 39.4 and 19.4 respectively. The number of years in which the population will be doubled assuming there is no immigration or emigration is (a) 35 years (b) 30 years. (c) 25 years (d) none of these Ans: (a) [SM, MTP1 May 19, MTP 2 May 19, May 21, Nov 23, July 24]
14.	The C.I on Rs. 4,000 for 6 months at 12% p.a payable quarterly is (a) Rs. 243.60 (b) Rs. 240 (c) Rs. 243

	(d) none of these Ans: (a)
15.	A man deposited Rs. 8, 000 in a bank for 3 years at 5% per annum compound interest, after 3 years he will get (a) Rs. 9,000 (b) Rs.8, 800 (c) Rs. 9,200 (d) Rs. 9261 Ans. (d) [MTP May 19]
16.	The effective rate of interest for one year corresponding to a nominal at 7% rate of interest per annum convertible quarterly is (a) Rs. 240 (b) Rs. 200 (c) Rs.220 (d) Rs.210 Ans. (d) [MTP May 19]
17.	Rs. 200 invested at the end of each month in an account paying interest 6% per year compounded monthly. What is the future value of this annuity after 10th payment? [Given that $(1.005)^{10} = 1.0511$] (a) Rs. 2045 (b) Rs.5055 (c) Rs.2044 (d) Rs.2065 Ans. (c) [MTP May 19]
18.	Suppose your father decides to gift you Rs. 10,000 every year starting from today for the next five years, you deposit this amount in a bank as and when you receive and get 10% per annum interest rate compounded annually. What is the present value of this annuity? ($P(4, 0.10) = 3.16987$) (a) Rs.41, 698.70 (b) Rs.45, 698.70 (c) Rs.41, 698.70 (d) Rs.41, 698.70 Ans. (a) [MTP May 19, Similar Nov 18]
19.	Rs. 10,000 is invested at annual rate of interest of 10% p.a. The amount after two years at annual compounding is (a) Rs. 21100 (b) Rs. 12100

	(c) Rs. 12110 (d) None of these Ans : (b) [MTP May 19, Nov 19]
20.	Rs.1000 is invested at the end of each month in an account paying interest 6% per year compounded monthly. What is the future value of annuity after 10th payment? (Given that $(1.005)^{10} = 1.0511$) (a) Rs.10220 (b) Rs.1022 (c) Rs.20000 (d) Rs.1020 Ans : (a) [MTP May 19, Nov 20 [Similar]]
21.	If the effective rate of interest is 12% per annum and the interest is compounded quarterly, the nominal rate of interest per annum (a) 11.78 % (b) 11.21 % (c) 11.89% (d) 11.49 % Ans : (d) [MTP May 19, Nov 18]
22.	Rs.5000 paid for ten years to off a loan. What is the loan amount if interest rate be 14% per annum compounded annually? (Given $P(10, 0.14) = 5.21611$) (a) Rs.26080.55 (b) Rs.26580.55 (c) Rs.26280.55

	(d) Rs.27080.55 Ans : (b) [MTP May 19]
23.	Rs. 10,000 is paid every year to off a loan, the loan amount if interest be 14% per annum compounded annually is (Given $P(10, 0.14) = 5.21611$) (a) Rs.5216.11 (b) Rs.1917.13 (c) Rs. 52,161.1 (d) Rs. 19,171, 3 Ans : (c) [MTP Nov 18]
24.	If A person invests Rs.3,000 in a three years' investment that pays you 12% per annum. Calculate the future value of the investment (a) Rs.4214.78 (b) Rs. 4124.78 (c) Rs.4324.48 (d) Rs.4526.48 Ans: (a) [MTP Nov 19, May 21(Similar)]
25.	Certain sum of money borrowed at simple interest amount to Rs.2688 in three years and to Rs.2784 in four years at the rate per annum equal to (a) 0.07 (b) 0.06 (c) 0.05 (d) 4% Ans: (d) [MTP Nov 19]

EXERCISE 4C

1.	The present value of an annuity of Rs. 3000 for 15 years at 4.5% p.a CI is (a) Rs. 23,809.41 (b) Rs. 32,218.76 (c) Rs. 32,908.41 (d) none of these Ans: (b) [SM, MTP Nov 21]
2.	The amount of an annuity certain of 150 for 12 years at 3.5% p.a C.I is (a) Rs. 2,190.28 (b) Rs. 1,290.28 (c) Rs. 2,180.28 (d) none of these

	Ans: (a)
3.	A loan of 10,000 is to be paid back in 30 equal instalments. The amount of each instalment to cover the principal and at 4% p.a CI is (a) Rs. 587.87 (b) Rs. 587 (c) Rs. 578.30 (d) none of these Ans: (c)
4.	$A = 1,200$ $n = 12$ years $i = 0.08$, $V = ?$ Using the formula $V = \frac{A}{i} \left[1 - \frac{1}{(1+i)^n} \right]$ value of v will be

	(a) Rs. 3,039 (b) Rs. 3,990 (c) Rs. 9,930 (d) Rs. 9,043.30 Ans: (d)
5.	A = 100 n = 10, i = 5% find the FV of annuity Using the formula $FV = a / (1 + i)^n - 1$, FV is equal to (a) Rs. 1,258 (b) Rs. 2,581 (c) Rs. 1,528 (d) none of these Ans: (a)
6.	If the amount of an annuity after 25 years at 5% p.a C.I is Rs. 50,000 the annuity will be (a) Rs. 1,406.90 (b) Rs. 1,047.62 (c) Rs. 1,146.90 (d) none of these Ans: (b)
7.	Given annuity of Rs. 100 amounts to Rs. 3137.12 at 4.5% p.a C. I. The number of years will be (a) 25 years(appx.) (b) 20 years(appx.) (c) 22 years(appx.) (d) none of these Ans: (b)
8.	A company borrows Rs. 10,000 on condition to repay it with compound interest at 5% p.a by annual installments of Rs. 1000 each. The number of years by which the debt will be clear is (a) 14.2 years (b) 10 years (c) 12 years (d) none of these Ans: (a)
9.	Mr. X borrowed 5,120 at 12 12% p.a C.I. At the end of 3 yrs, the money was repaid along with the interest accrued. The amount of interest paid by him is (a) Rs. 2,100 (b) Rs. 2,170 (c) Rs. 2,000 (d) none of these Ans: (b)
10.	Mr. Paul borrows 20,000 on condition to repay it with C.I. at 5% p.a in annual instalments of Rs. 2000 each. The number

	of years for the debt to be paid off is (a) 10 years (b) 12 years (c) 11 years (d) 14.2 years Ans: (d)
11.	A person invests 500 at the end of each year with a bank which pays interest at 10% p. a C.I. annually. The amount standing to his credit one year after he has made his yearly investment for the 12th time is. (a) Rs. 11,761.36 (b) Rs. 10,000 (c) Rs. 12,000 (d) none of these Ans: (a) [SM, MTP Jan 25, May 20]
12.	The present value of annuity of Rs. 5,000 per annum for 12 years at 4% p.a C.I. annually is (a) Rs. 46,000 (b) Rs. 46,850 (c) Rs. 15,000 (d) Rs. 46,925.40 Ans: (d)
13.	A person desires to create a fund to be invested at 10% CI per annum to provide for a prize of Rs. 300 every year. Using $V = a/i$ find V and V will be (a) Rs. 2,000 (b) Rs. 2,500 (c) Rs. 3,000 (d) none of these Ans: (c) [SM, MTP Jan 25, May 20, Nov 21]
14.	Paul borrows Rs. 20,000 on condition to repay it with compound interest at 5% p.a. in annual instalment of Rs. 2,000 each. Find the number of years in which the debt would be paid off. (a) 10 years (b) 12 years (c) 14 years (d) 15 years Ans : C [MTP Dec 23, June 23]

EXERCISE 4D

1.	A = Rs. 5,200, R = 5% p.a., T = 6 years, P will be (a) Rs. 2,000 (b) Rs. 3,880 (c) Rs. 3,000 (d) none of these Ans: (b) [SM, MTP Jan 25, May 20]
2.	If P = 1,000, n = 4 years., R = 5% p.a then C. I will be (a) Rs. 215.50 (b) Rs. 210 (c) Rs. 220 (d) none of these Ans: (a)
3.	The time in which a sum of money will be double at 5% p.a C.I is (a) 10 years (b) 12 years (c) 14.2 years (d) none of these Ans: (c)
4.	If A = 10,000, n = 18yrs., R = 4% p.a C.I, P will be (a) Rs. 4,000 (b) Rs. 4,900 (c) Rs. 4,500 (d) Rs. 4,936.30 Ans: (d)
5.	The time by which a sum of money would treble it self at 8% p. a C. I is (a) 14.28 years (b) 14 years (c) 12 years (d) none of these Ans: (a) [SM, MTP Jan 25, May 20]
6.	The present value of an annuity of 80 a years for 20 years at 5% p.a is [Given $(1.05)^{20} = 2.6533$] (a) Rs. 997 (appx.) (b) Rs. 900 (c) Rs. 1,000 (d) none of these Ans: (a) [SM, MTP Jan 25, May 20]

7.	A person bought a house paying 20,000 cash down and Rs. 4,000 at the end of each year for 25 yrs. at 5% p.a. C.I. The cash down price is (a) Rs. 75,000 (b) Rs. 76,000 (c) Rs. 76,375.50 (d) none of these Ans: (c) [SM, MTP Jan 25, May 20]
8.	A man purchased a house valued at 3,00,000. He paid 2,00,000 at the time of purchase and agreed to pay the balance with interest at 12% per annum compounded half yearly in 20 equal half yearly instalments. If the first instalment is paid after six months from the date of purchase then the amount of each instalment is [Given $\log 10.6 = 1.0253$ and $\log 31.19 = 1.494$] (a) Rs. 8,718.45 (b) Rs. 8,769.21 (c) Rs. 7,893.13 (d) none of these Ans: (a) [SM, MTP Jan 25, May 20]
9.	Y bought Motor Bike Costing 80,000 by making down payment of Rs. 30000 and agreeing to make annual payment for four years. How much would be each payment if the interest on unpaid amount be 14% compounded annually. [Given $P(4, 0.14) = 2.91371$] (a) Rs. 17160.25 (b) Rs. 17600.25 (c) Rs. 15600.25 (d) Rs. 16600.25 Ans: (a) [MTP May 19]
10.	X bought a TV costing 25,000 making down payment of Rs. 5000 and agreeing to make equal annual payment for four years. How much would be each payment if the interest on unpaid amount be 14% compounded annually? [$P(4, 0.14) = 2.91371$] (a) Rs. 6864.10 (b) Rs. 6850.63

	(c) Rs.6859 (d) Rs.6871 Ans : (a) [MTP May 19, Nov 18]
11.	17. Anil bought a motor cycle costing Rs.1,30,000 by making a down payment of Rs.30,000 and agreeing to make equal annual payment for five years. How much would be each payment if the interest on unpaid amount be 10% compounded annually? [$P(5, 0.10) = 3.7908$] (a) Rs.28379.70 (b) Rs.26300.70 (c) Rs.26500.70 (d) Rs.26379.70 Ans: (d) [MTP Nov 19, May 21]
12.	Shoba borrows Rs.50,00,000 to buy a house. If he pays equal instalments for 20 years

	and 10% interest on outstanding balance, what will be the equal annual instalment? [Given : $P(20, 0.10) = 8.51356$] (a) Rs.687298.4 (b) Rs.685298.4 (c) Rs.585298.4 (d) Rs.587298.4 Ans: (d) [MTP Nov 19, May 21]
13.	Mr. A borrows 5,00,000 to buy a house. If he pays equal instalments for 20 years and 10% interest on outstanding balance what will be the equal annual instalment? (a) ₹ 58239.84 (b) ₹ 58729.84 (c) ₹ 68729.84 (d) None of these Ans : b [MTP Dec 24, Nov 18, April 24]

Additional Question Bank

1.	The difference between compound and simple interest at 5% per annum for 4 years on Rs. 20,000 is (a) 250 (b) 277 (c) 300 (d) 310 Ans: (d) [SM, MTP June 24]
2.	The compound interest on half-yearly rests on 10,000 the rate for the first and second years being 6% and for the third year 9% p.a. is . (a) 2,200 (b) 2,287 (c) 2,285 (d) None Ans: (d) [SM, MTP Jan 25, May 20]
3.	The present value of 10,000 due in 2 years at 5% p.a. compound interest when the interest is paid on yearly basis is Rs. (a) 9,070 (b) 9,000 (c) 9,061 (d) None Ans: (a)
4.	The present value of 10,000 due in 2 years

	at 5% p.a. compound interest when the interest is paid on half-yearly basis is (a) 9,070 (b) 9,069 (c) 9,061 (d) None Ans: (c) [SM, MTP Jan 25, May 20]
5.	Johnson left Rs. 1,00,000 with the direction that it should be divided in such a way that his minor sons Tom, Dick and Harry aged 9, 12 and 15 years should each receive equally after attaining the age 25 years. The rate of interest being 3.5%, how much each son receive after getting 25 years old? (a) 50,000 (b) 51,994 (c) 52,000 (d) None Ans: (d)
6.	In how many years will a sum of money double at 5% p.a. compound interest? (a) 15 years 3 months (b) 14 years 2 months (c) 14 years 3 months (d) 15 years 2 months Ans: (b)
7.	In how many years a sum of money trebles at 5% p.a. compound interest payable on half-

	yearly basis? (a) 18 years 7 months (b) 18 years 6 months (c) 18 years 8 months (d) 22 years 3 months Ans: (d)
8.	A machine depreciates at 10% of its value at the beginning of a year. The cost and scrap value realized at the time of sale being 23,240 and 9,000 respectively. For how many years the machine was put to use? (a) 7 years (b) 8 years (c) 9 years (d) 10 years Ans: (c) [SM, MTP Jan 25, May 20]
9.	A machine worth 4,90,740 is depreciated at 15% on its opening value each year. When its value would reduce to 2,00,000? (a) 4 years 6 months (b) 4 years 7 months (c) 4 years 5 months (d) 5 years 7 months approximately Ans: (d) [SM, MTP June 24]
10.	A machine costs Rs .1,00, 000. The depreciation rate is 10% per annum. The scrap value of the machine at the end of 5 years is (a) Rs.49490 (b) Rs. 59049 (c) Rs.61029 (d) Rs.51049 Ans : (b) [MTP May 19]
11.	A machine worth 4,90,740 is depreciated at 15% of its opening value each year. When its value would reduce by 90%? (a) 11 years 6 months (b) 11 years 7 months (c) 11 years 8 months (d) 14 years 2 months approximately Ans: (d) [SM, MTP June 24]
12.	Alibaba borrows 6 lakhs Housing Loan at 6% repayable in 20 annual installments commencing at the end of the first year. How much annual payment is necessary. (a) Rs. 52,420

	(b) Rs. 52,419 (c) Rs. 52,310 (d) Rs. 52,320 Ans: (c)
13.	A sinking fund is created for redeeming debentures worth 5 lakhs at the end of 25 years. How much provision needs to be made out of profits each year provided sinking fund investments can earn interest at 4% p.a? (a) Rs. 12,006 (b) Rs. 12,040 (c) Rs. 12,039 (d) Rs. 12,035 Ans: (a) [MTP May 18, June 24]
14.	A machine costs 5,20,000 with an estimated life of 25 years. A sinking fund is created to replace it by a new model at 25% higher cost after 25 years with a scrap value realization of 25000. what amount should be set aside every year if the sinking fund investments accumulate at 3.5% compound interest p.a.? (a) Rs. 16,000 (b) Rs. 16,500 (c) Rs. 16,050 (d) Rs. 16,005 Ans: (c)
15.	Raja aged 40 wishes his wife Rani to have 40 lakhs at his death. If his expectation of life is another 30 years and he starts making equal annual investments commencing now at 3% compound interest p.a. how much should he invest annually? (a) 84,448 (b) 84,450 (c) 84,449 (d) 84,080 Ans: (d)
16.	Appu retires at 60 years receiving a pension of 14,400 a year paid in half-yearly installments for rest of his life after reckoning his life expectation to be 13 years and that interest at 4% p.a. is payable half-yearly. What single sum is equivalent to his pension? (a) 1,45,000 (b) 1,44,900 (c) 1,44,800 (d) 1,44,700

	Ans: (b)
17.	The time in which a sum of money will be doubled at 6% compound interest compounded interest compounded annually approximately (a) 10 years (b) 12 years (c) 13 years (d) 14 years Ans : (b) [MTP May 18, June 24]
18.	A sum of Money doubles itself at compound interest in 10years. In how many years will it become eight times (a) 10 (b) 30 (c) 40 (d) 35 Ans : (b) [MTP May 18, May 19, Nov 19, June 24]
19.	Net Present value ≥ 0 , then (a) Accept the Proposal (b) Reject the proposal (c) Not Feasible (d) none of these Ans : (a) [MTP May 18, June 24]
20.	Nominal Rate of Return = (a) Real Rate of Return - Inflation (b) Real Rate of Return + Inflation (c) Real Rate of Return / Inflation (d) Real Rate of Return $\times$ Inflation Ans : (b) [MTP May 18, May 19, June 24]
21.	A machine worth of Rs. 4,90,740 is depreciated at 15% on its opening value each year. When its value reduce to Rs. 2,00,000, (a) 5 years 6 months (b) 5 years 7 months (c) 5 years 5 months (d) none Ans : (a) [MTP May 18]

22.	Nominal rate of Interest 9.9% p.a. If Interest is compounded monthly. What will be the effective rate of Interest? (Given $(\frac{4033}{4000})^{12} = 1.1036$) (a) 10.36 % (b) 9.36% (c) 11.36% (d) 9.9 % Ans : (a) [MTP May 18, Nov 23, June 24, July 24]
23.	Future value of Ordinary Annuity (a) $A(n, i) = A[\frac{(1+i)^n - 1}{i}]$ (b) $A(n, i) = A[\frac{(1+i)^{n+1}}{i}]$ (c) $A(n, i) = A[\frac{(1+i)^n}{i}]$ (d) $A(n, i) = A[\frac{(1+i)^{n-1}}{i(1+i)^n}]$ Ans : (a) [MTP May 18, June 24, May 21]
24.	Find the future value of an annuity of Rs. 500 made annually for 7 years at interest rate of 14 % per annum [Given that $(1.14)^7 = 2.5023$] (a) Rs. 5365.35 (b) Rs. 5000 (c) Rs. 5325.65 (d) Rs.6000.35 Ans. (a) [MTP1 May 19, MTP 2 May 19, Nov 18, Dec 23]
25.	Net Present Value (NPV) (a) Present value of net cash Inflow - Total net Investment (b) Present value of net cash Inflow - Present value of cash outflow (c) Total net Investment- Present value of net cash Inflow (d) a or b Ans. (d) [MTP May 19]
26.	What is the effective rate of interest if the nominal rate 5 % p.a converted quarterly? (a) 6.09 % (b) 5.09 % (c) 5.55% (d) 5.60 % Ans: (b) [MTP Nov 19]

27.	Find the effective rate of interest equivalent to the nominal rate of 7% converted monthly (a) 7.26% (b) 7.22% (c) 7.02% (d) 7.20% Ans : (b)

[MTP Nov 21]

RTP MTP

1.	A sum of Rs. 46,875 was lent out at simple interest and at the end of 1 year 8 months the total amount was Rs. 50,000. Find the rate of interest percent per annum. (a) 5% (b) 6% (c) 4% (d) 8% Ans : c [MTP Jan 25, May 20, Nov 21]
2.	The value of furniture depreciates by 10% a year, if the present value of the furniture in an office is Rs. 21870, calculate the value of furniture 3 years ago (a) Rs. 30,000 (b) Rs. 35,000 (c) Rs. 40,000 (d) Rs. 45,000 Ans. (a) [MTP May 19, Dec 24, April 24]
3.	A machine can be purchased for Rs. 50,000. Machine will be contributing Rs. 12,000 per year for the next five years. Assuming borrowing cost is 10% per annum. Determine whether machine should be purchased or not (a) Should be purchased (b) Should not be purchased (c) Can't say about purchase (d) none of the above Ans : (b) [MTP May 19, May 21]
4.	A machine can be purchased for Rs. 50,000. Machine will contribute Rs. 12,000 per year for the next five years. Assume borrowing cost is 10% per annum compounded annually. Determine whether machine would be purchased or not? (a) Purchased

	(b) Not purchased (c) Profitable (d) None of the above Ans : (b) [MTP Nov 18, Dec 23]
5.	Suppose your friend decided gift to you Rs. 10000 every year starting from today for the next five years. Your deposit this amount in a bank as and when you receive and get 10% per annum interest compounded annually. What is the present value of this annuity? (a) Rs.42698.70 (b) Rs.43698.70 (c) Rs.45698.70 (e) Rs.41698.70 Ans : (d) [MTP May 19]
6.	A company is considering proposal of purchasing a machine either by making full payment of Rs.4000 or by leasing it for four years at an annual rate of Rs.1250. Which course of action is preferable if the company can borrow money at 14% compounded annually? $[P(4,0.14) = 2.9137]$ (a) leasing is not preferable (b) leasing is preferable (c) cannot determined (d) none of these Ans: (b) [MTP Nov 19, Nov 20(Similar), May 21, June 23]
7.	At six months' intervals A deposited of Rs. 1000 in a savings account which credit interest at 10% p.a., compounded semi-annually. The first deposit was made when A's son was 6 months old and last deposit was made when his son was 8 years old. The

	money remained in the account and was presented to the son on his 10th birthday. How much did he receive? $(1.06)^{16} = 2.1829$ (a) Rs.25740 (b) Rs.23740 (c) Rs.25860 (d) Rs.25760 Ans: (b) [MTP Nov 19]
8.	An overdraft of Rs. 50,000 to be paid back in equal annual installments over a period of 20 years. Find the value of Installment, if interest is compounded annually at 14% per annum. [Given $(1.14)^{20} = 13.74349$] (a) Rs .550.50 (b) Rs .549.30 (c) Rs .559.50 (d) Rs .560.50 Ans: (b) [MTP Nov 19]
9.	A trust fund has invested Rs. 30,000 in two different types of bonds which pays 5% and 7% interest respectively. Determine how much amount is invested in each type of bond if trust obtains an annual total interest of Rs. 1600 (a) Rs.5000 (b) Rs.6000 (c) Rs.7000 (d) Rs. 8000 Ans: (a) [MTP Nov 19]
10.	A sum of money gets doubled in 5 years at X% simple interest. If the interest was Y%, the sum of money would have become ten-fold in thirty years. What is Y - X (in %) (a) 10 (b) 5 (c) 8 (d) none of these Ans : (a) [MTP Nov 21]
11.	The nominal rate of growth is 17% and inflation is 9% for the five years. Let P be the Gross Domestic Product (GDP) amount at the present year then the projected real GDP after 6 years is (a) 1.587P (b) 1.921 P (c) 1.403 P

	(d) 2.51 P Ans : (a) [MTP Nov 21, Nov 23, July 24, RTP Jan 25]
12.	The difference between Compound Interest and Simple Interest on a certain sum for 2 years at 6% p.a. is ₹ 13.50. Find the sum (a) 3750 (b) 2750 (c) 4750 (d) none of these Ans : (a) [MTP Nov 21]
13.	The compound interest earned by a money lender on ₹ 7,000 for 3 years if the rate of interest for 3 years are 7%, 8% and 8.5% respectively is (a) 1750 (b) 1800 (c) 1776 (d) none of these Ans : (c) [MTP Nov 21]
14.	Find the present value of an annuity of ₹ 1,000 payable at the end of each year for 10 years, if the money is worth 5% effective (a) Rs 7,724 (b) Rs 7000 (c) Rs 8000 (d) none of these Ans : (a) [MTP Nov 21, April 24(Similar)]
15.	The future value of annuity of ₹2000 for 5 years at 5 % compounded annually is given (in nearest ₹) as (a) Rs 11051 (b) Rs 21021 (c) Rs 15624 (d) RS 61254 Ans : (a) [MTP Nov 21]
16.	A Maruti Zen cost ₹ 3,60,000. Its price depreciates at the rate of 10% of a year during the first two years and at the rate of 20% in third year. Find the total depreciation. (a) Rs 1,26,720 (b) Rs 1,15,620 (c) Rs 1,25,000 (d) Rs 1,10,520 Ans : (a)

[MTP Nov 21]										
17.	Arun purchased a vacuum cleaner by giving ₹1700 as cash down payment, which will be followed by five EMIs of ₹480 each. The vacuum cleaner can also be bought by paying ₹3900 cash. What is the approx. rate of interest p.a. (at simple interest) under this instalment plan? (a) 18% (b) 19% (c) 22% (d) 20% Ans : (c)									
[MTP Nov 21]										
18.	Present Value of a five year annuity is Rs. 2,000. If the rate of interest is 8% p.a., what is the amount of each annuity payment? (a) Rs.500.9 (b) Rs.463.8 (c) Rs.363.1 (d) Rs.486.4 Ans : (a)									
[MTP Nov 21]										
19.	Abdul has taken a loan from Bahadur at 7% p.a. The loan has to be repaid in three equal yearly instalments of Rs. 10,000 each. What is the amount of loan taken? (a) Rs.25,467 (b) Rs.26,897 (c) Rs.26,243 (d) None of the above Ans : (c)									
[MTP Nov 21]										
20.	A took a loan from B. The loan is to be repaid in annual installments of Rs. 2,000 each. The first instalment is to be paid three years from today and the last one is to be paid 8 years from today? What is the value of loan today, using a discount rate of eight percent? (a) Rs.9,246 (b) Rs.7,927 (c) Rs.8,567 (d) None of the above Ans : (b)									
[MTP Nov 21]										
21.	If the cost of capital be 12% per annum, then the Net Present Value (in nearest Rs.) from the given cash flow is given as									
<table><tr><td>Year</td><td>0</td><td>1</td><td>2</td><td>3</td></tr></table>						Year	0	1	2	3
Year	0	1	2	3						

	<table><tr><td>Operating Profit (in 000 Rs.)</td><td>(100)</td><td>60</td><td>40</td><td>50</td></tr></table> (a) Rs.34048 (b) Rs.34185 (c) Rs.51048 (d) Rs.21048 Ans : (d)	Operating Profit (in 000 Rs.)	(100)	60	40	50									
Operating Profit (in 000 Rs.)	(100)	60	40	50											
	[MTP Nov 21]														
22.	Let the operating profit of a manufacturer for five years is given as <table><tr><td>Year</td><td>Operating Profit in Lakh Rs.</td></tr><tr><td>1</td><td>90</td></tr><tr><td>2</td><td>100</td></tr><tr><td>3</td><td>106.4</td></tr><tr><td>4</td><td>107.14</td></tr><tr><td>5</td><td>120.24</td></tr><tr><td>6</td><td>157.35</td></tr></table> Calculate Compound Annual Growth Rate (CAGR) (a) 9% (b) 12% (c) 11% (d) 13% Ans : (b)	Year	Operating Profit in Lakh Rs.	1	90	2	100	3	106.4	4	107.14	5	120.24	6	157.35
Year	Operating Profit in Lakh Rs.														
1	90														
2	100														
3	106.4														
4	107.14														
5	120.24														
6	157.35														
	[MTP Nov 21]														
23.	If a sum triples itself in 15 years at simple rat of interest, the rate of interest per annum will be: (a) 13% (b) 13.3% (c) 13.5% (d) 18.0% Ans : (b)														
	[MTP Nov 21]														
24.	What will be population after 3 years when present population is 25, 000 and population increases at the rate of 3% in I year, at 4% in II year and 5% in III year? (a) Rs.28,119 (b) Rs.29,118 (c) Rs.27, 000 (d) Rs.30, 000 Ans : (a)														
	[MTP Nov 21, Nov 20, RTP Sep 24, Jan 25]														
25.	What will be the population after 3 years , when present population is 1.00.000 and the														

	population increases at 3% in year 1st year , at 4% in second year and 5% in third year. (a) 1,12,476 (b) 1,15,476 (c) 1,20,576 (d) 1,25,600 Ans : (a) [MTP April 24]
26.	The future value of an annuity of Rs.1500 made annually for five years at interest of 10% compounded annually is (Given that $(1.1)^5 = 1.61051$) (a) Rs.9517.56 (b) Rs.9157.65 (c) Rs.9715.56 (d) Rs.9175.65 Ans : (b) [MTP Nov 21, April 24, RTP Jan 25]
27.	How much will be Rs.25,000 to in 2 years at compound interest if the rates for the successive years are at 4% and 5% per year (a) Rs.27,300 (b) Rs.27,000 (c) Rs.27,500 (d) Rs.27,900 Ans : (a) [MTP Nov 21, Dec 24]
28.	In what time will be a sum of money doubles itself at 6.25% p.a simple interest ? (a) 5 years (b) 8 years (c) 12 years (d) 16 years Ans : (d) [MTP May 22, May 21, May 24]
29.	Mr. X invests Rs. 10,000 every year starting from today for next 10 years suppose interest rate is 8% per annum compounded annually. Calculate future value of the annuity: (Given that $(1+0.08)^{10} = 2.158925$) (a) Rs. 156454.88 (b) Rs. 144865.625 (c) Rs. 156554.88 (d) none of these Ans : (a) [MTP May 22, Nov 22]
30.	The difference between the simple and compound interest on a certain of 3 years at 5% p.a is Rs. 228.75. The compound interest on the sum of for 2 years at 5% per annum is (a) Rs. 3175

	(b) Rs. 3075 (c) Rs. 3275 (d) Rs. 2975 Ans : (b) [MTP May 22, May 21]
31.	How much time would the simple interest on a certain sum be 0.125 times the principal at 10% per annum (a) $1\frac{1}{4}$ (b) $1\frac{3}{4}$ (c) $2\frac{1}{4}$ (d) $2\frac{3}{4}$ Ans : (a) [MTP May 22]
32.	The time in by which a sum of money is 8 times of itself if it doubles itself in 15 years interest compounded annually. (a) 42 years (b) 43 years (c) 45 years (d) 46 years Ans : (c) [MTP May 22, Dec 24, May 24]
33.	Present value of a scooter is ₹7290, if its value decreases every year by 10% then the value before 3 years is equal to (a) 10,000 (b) 10,500 (c) 20,000 (d) 20,500 Ans : (a) [MTP May 22, May 24]
34.	Find the effective rate of interest at 10% p.a when the interest is payable quarterly. (a) 10.38% (b) 5% (c) 5.04% (d) 4% Ans : (a) [MTP May 22, Nov 22]
35.	The difference between in simple interest on a sum invested of Rs.1500 for 3 years is Rs.18. The difference in their rate is (a) 0.4 (b) 0.6 (c) 0.8 (d) 0.10 Ans.(a) [MTP May 22, Nov 22]
36.	What will be the population after 3 years . When the population increases at the rate 3

	% in I year, 4 % in II year and 5% in III year. (a) 28,119 (b) 29,118 (c) 27,000 (d) 30,000 Ans.(a) [MTP May 22, 21, Nov 22]
37.	If Rs.10,000 is invested at 8 % per annum, then compounded quarterly. Then value of investment after 2 years is (a) ₹11,716.59 (b) ₹10,716.59 (c) ₹12,715.59 (d) none of these Ans : (a) [MTP May 22, May 24, RTP Sep 24]
38.	In how many years will a sum of money become double at 5% p.a compound interest (a) 14 years (b) 15 years (c) 16 years (d) 14.3 years Ans : (d) [MTP May 22, June 24, Dec 24, RTP Sep 24]
39.	The future value of an annuity of Rs. 1,000 is made annually for 5 years at interest rate of 14% compounded annually [Given that $(1.14)^5 = 1.92541$] is (a) Rs. 5610 (b) Rs. 6610 (c) Rs. 6160 (d) Rs. 5160 Ans : (b) [MTP May 22, May 24, RTP Sep 24]
40.	A lent Rs. 6000 to B for 2 years and 1500 to C for 4 years and received total interest of Rs. 900 from both. The rate of interest of Rs. 900 from both. The rate of interest, when simple interest method calculated (a) 5% (b) 6% (c) 7.5% (d) 9% Ans : (a) [MTP Nov 18]
41.	If the difference between the interests received from two different banks on Rs. 5000 for 2 years is Rs. 50 then the

	difference between this rates (a) 0.25 % (b) 0.40% (c) 0.50% (d) 0.75% Ans : (c) [MTP Nov 18]
42.	The simple interest of P % for P years will be Rs. P on a sum of (a) Rs. $\frac{p}{100}$ (b) Rs. $\frac{100}{p}$ (c) Rs. $(\frac{p}{100} + 1)$ (d) Rs. $(\frac{100}{p} - 1)$ Ans : (b) [MTP Nov 18]
43.	The compound interest on a certain sum is Rs. 209 simple interest is Rs. 200 for 2 years. What is the rate per cent for 2 years? what is the rate percent? (a) 9% (b) 18% (c) 4.5% (d) 10% Ans : (a) [MTP Nov 18]
44.	The value of a machine depreciates 12% annually. If the present value of Rs.68,150 then its value in 3 years ago was (a) Rs. 1,10,000 (b) Rs. 1,00,004 (c) Rs. 92,000 (d) Rs. 97,000 Ans : (b) [MTP Nov 18]
45.	What principal will amount to Rs. 370 in 6 years at 8% p.a. at simple interest (a) Rs.210 (b) Rs.250 (c) Rs.310 (d) Rs.310 Ans : (b) [MTP Nov 18]
46.	The effective rate of interest is an amount Rs. 25,000 is deposited in a bank for one year at value of 6% per annum compounded semi-annually is (a) 5.99% (b) 5.95% (c) 6.09%

	(d) 6.90% Ans : (c) [MTP Nov 18]
47.	Find the future value of annuity Rs.1000 made annually for 7 years at interest rate of 14% compounded annually is ____ Given $(1.14)^7 = 2.5023$ (a) Rs.10730.71 (b) Rs.10735 (c) Rs.10734 (d) Rs.10237 Ans : (a) [MTP Nov 18]
48.	The present value of Rs.1 to be receive after 3 year compounded annually at 11% interest is (a) 0.713 (b) 0.811 (c) 0.731 (d) 0.658 Ans : (c) [MTP Nov 18]
49.	Find the Present value of Rs.10,000 to be required after 5 years, If the Interest be 9%. Given $(1.09)^5 = 1.5386$ (a) Rs.6500 (b) Rs. 6499.42 (c) Rs. 6600.52 (d) Rs.6700.52 Ans : (b) [MTP Nov 18, Nov 20]
50.	Rs.500 is invested is invested at the end of each month is an account paying interest 8% per year compounded monthly. The future value of annuity after 10th payment is $(1.08)^{10} = 2.15893$ (a) Rs.7243.31 (b) Rs.7423.30 (c) Rs.3451.50 (d) Rs. 3541.50 Ans : (a) [MTP Nov 18]
51.	Assuming, that discount rate is 7% per annum, how much would you pay to receive Rs.50, growing at 5%, annually, forever. (a) 2500 (b) 3000 (c) 3500 (d) 4000 Ans: (a) [MTP June 24, Nov 18]

52.	Assuming that the discount rate is 10% per annum, how much would you pay to receive Rs.800, growing at 8%, annually, forever? (a) Rs. 1000 (b) Rs. 1050 (c) Rs. 950 (d) None of these Ans : A [MTP Dec 23]
53.	What is the rate of simple interest if a sum of money amount ₹ 2,784 in 4 years and ₹ 2,688 in 3 years ? (a) 1%p.a. (b) 4%p.a. (c) 5%p.a. (d) 8%p.a. Ans : b [MTP Dec 24]
54.	Mr. X bought an electronic item for ₹ 1000. What would be the future value of the same item after two years, if the value is compounded semi-annually at the rate of 22% per annum ? (a) ₹ 1488.40 (b) ₹ 1518.07 (c) ₹ 2008.07 (d) ₹ 2200.00 Ans : B [MTP Dec 24]
55.	The difference between simple and compound interest on a sum of ₹ 10000 for 4 years at the rate of interest 10% per annum is (a) 650 (b) 640 (c) 641 (d) 600 Ans : c [MTP Dec 24]
56.	The effective rate of interest does not depend upon (a) Amount of Principal (b) Amount of Interest (c) Number of Conversion Periods (d) None of these Ans : A [MTP Dec 24, May 22, Nov 22]
57.	If $p. i^2 = 96$, and $R = 8\%$ compounded annually then $P =$ (a) ₹ 14,000 (b) ₹ 15,000

	(c) ₹ 16,000 (d) ₹ 17,000 Ans : C [MTP Dec 24]
58.	If a bank pays 6% interest compounded quarterly what equal deposit have to be made at the end of the each quarter for 3 years if you want to have ₹ 1500 at the end of 3 years? (a) ₹ 117.86 (b) ₹ 115.01 (c) ₹ 150.50 (d) None of these Ans : B [MTP Dec 24]
59.	Find the present value of an annuity which pays 200 at the end of each 3 months for 10 years assuming money to be worth 5% converted quarterly? (a) ₹ 3473.86 (b) ₹ 3108.60 (c) ₹ 6265.38 (d) None of these Ans : C [MTP Dec 24, April 24, June 23]
60.	A company establishes a sinking fund to provide for the payment of ₹ 2,00,000 debt maturing in 20 years. Contributions to the fund are to be made at the end of every year. Find the amount of each annual deposit if interest is 5% per annum: (a) ₹ 6,142 (b) ₹ 6,049 (c) ₹ 6,052 (d) ₹ 6,159 Ans : b [MTP Dec 24]
61.	Suppose your mom decides to gift you ₹ 10,000 every year starting from today for the next sixteen years. You deposit this amount in a bank as and when you receive and get 8.5% per annum interest rate compounded annually. What is the present value of this money: [Given that $P(15, 0.085) = 8.304236$] (a) 83,042 (b) 90,100 (c) 93,042 (d) 10,100 Ans : c

	[MTP Dec 24, April 24]
62.	A sum of money triples itself in 18 years under simple interest. what is the rate of interest per annum? (a) 9 % (b) 9.09 % (c) 11.11 % (d) 13 % Ans : (c) [MTP Nov 20]
63.	What time will be required for a sum of money to double itself at 8 % Simple interest? (a) 8 Years (b) 8.5 Years (c) 12.5 Years (d) 12 Years Ans : (c) [MTP Nov 20]
64.	The difference between simple interest and compound interest on a sum of Rs 6,00,000 for two years is Rs 6000. What is the annual rate of interest? (a) 8 % (b) 10 % (c) 6 % (d) 12 % Ans : (b) [MTP Nov 20]
65.	What is the sum of money will amount to Rs 11035.50 in four years at compound interest for 1st, 2nd, 3rd and 4th years being 4%, 3%, 2% and 1% respectively (a) Rs 1000 (b) Rs 11,000 (c) Rs 1035 (d) Rs 11,305 Ans : (a) [MTP Nov 20]
66.	A Machine was purchased for Rs 10,000. Its rate of depreciation is 10% in the first year and 5 % per annum afterwards. Find the depreciated value of Machine after 7 years of purchase (Given $(0.95)^6 = 0.7351$) (a) Rs 6606 (b) Rs 6616 (c) Rs 6660 (d) Rs 6661

	Ans : (b) [MTP Nov 20]
67.	A man borrows Rs4000 from a bank at 10% compound interest. At the end of every years 1,500 as part of repayment of loan and interest. How much is still owe to the bank after three such instalments [Given: $(1.1)^3 = 1.331$] (a) Rs 824 (b) Rs 820 (c) Rs 724 (d) Rs 720 Ans : (a) [MTP Nov 20]
68.	SI = 0.125 P at 10% p.a find the time (a) 1.25 years (b) 25 Years (c) 0.25 Years (d) none Ans : (a) [MTP Nov 20, Nov 22]
69.	The difference between the compound interest and simple interest on Rs. 1,000 for 2 years at the rate of 10% per annum is (a) Rs.40 (b) Rs.20 (c) Rs.30 (d) Rs.10 Ans : (d) [MTP Nov 18]
70.	Rs, 5,000 is paid every year for ten years to pay off a loan , what is the loan amount the loan amount if interest rate be 14% per annum compounded annually is (Given $P(10, 0.14) = 5.21611$) (a) Rs.26080.55 (b) Rs.1917.13 (c) Rs. 52,161.1 (d) Rs. 19,171, 3 Ans : (a) [MTP Nov 18, May 21]
71.	Find the effective rate of interest if an amount of 30,000 deposited in a bank. For 1 year at the rate of 10% per annum compounded semi-annually. (a) 0.1005 (b) 0.101 (c) 0.102 (d) 0.1025 Ans : 4 [MTP May 22]

72.	The present population of a town is 25,000. If it grows at the rate of 4%, 5%, 8% during 1 st year, 2 nd year, 3 rd year respectively. Then find the population after 3 years. (a) 29484 (b) 29844 (c) 29448 (d) 28944 Ans : 1 [MTP May 22]
73.	The rate of interest for the first 2 year is 3% per annum, for next 3 years is 8% per annum and for the period beyond 5 years, 10% per annum. If a man gets Rs. 1520 as a simple interest for 6 years; how much money did he deposit? (a) Rs 3800 (b) Rs 3000 (c) Rs 4000 (d) None of these Ans : 1 [MTP May 22]
74.	Suppose your parent decides to open a PPF account in a bank towards your name with Rs. 10,000 every year staring from today for next 15 years. When you receive and get 8.5% per annum interest rate compounded annually. What is the present value of this annuity? (a) 83042 (b) 80900 (c) 90100 (d) None of these Ans : 3 [MTP May 22]
75.	In what rate % per annum will Rs.₹ 1,000 amounts to Rs.₹ 1331 in 3 years? The interest is compounded yearly is: (a) 0.1 (b) 0.12 (c) 0.11 (d) None of these Ans : 1 [MTP May 22]
76.	The difference between simple interest and compound interest on a certain for 2 years at 10% p.a. is Rs. 10. Find the Sum (a) Rs 1010 (b) Rs 1095 (c) Rs 1000 (d) Rs 990

	Ans : 3 [MTP May 22]
77.	The future value of an annuity of Rs. 5,000 is made annually for 8 years at interest rate of 9% compounded annually [Given that $(1.09)^8 = 1.99256$] is (a) Rs. 55,142.22 (b) Rs. 65,142.22 (c) Rs. 65,532.22 (d) Rs. 57,425.22 Ans : a [MTP May 22, June 23]
78.	In how many years will a sum of money becomes four times at 12% p.a. simple interest? (a) 18 years (b) 21 years (c) 25 years (d) 28 years Ans : 3 [MTP May 22]
79.	Find the effective rate of interest at 10% p.a. When interest is payable quarterly. (a) 0.1038 (b) 0.05 (c) 0.0504 (d) 0.04 Ans : 1 [MTP May 22, May 24]
80.	In simple interest if the principle is Rs. 2,000 and the rate and time are roots of the equation $x^2 - 11x + 30 = 0$ (a) Rs 500 (b) Rs 600 (c) Rs 700 (d) Rs 800 Ans : (b) [MTP May 22]
81.	Determine the present value of perpetuity of Rs. 50,000 per month at the rate interest 12% per annum is (a) Rs 45,00,000 (b) Rs 50,00,000 (c) Rs 55,00,000 (d) Rs 60,00,000 Ans : (b) [MTP May 22]
82.	10 years ago the earning per share (EPS) of ABC Ltd. was Rs. 5 share its EPS for this year is Rs. 22. Compute at what rate, EPS of

	the company grow annually? (a) 15.97% (b) 16.77% (c) 18.64% (d) 14.79% Ans : A [MTP April 23]
83.	Sinking fund factor is the reciprocal of : (a) Present value interest factor of a single cash flow (a) Present value interest factor of an annuity (b) Future value interest factor of an annuity (c) Future value interest factor of a single cash flow. Ans : C [MTP April 23, Nov 23, July 24]
84.	Rs. 10,000 is invested every month and in an account paying interest @ 12% per annum compounded monthly. What is the future value of this annuity just after making 11 th payment" (Given that $(1.01)^{11} = 1.1156$) (a) Rs. 115,600 (b) Rs. 156100 (c) Rs. 156,800 (d) Rs. 157,100 Ans : A [MTP April 23, May 21]
85.	Mr. A invested Rs. 20,000 every year for next 3 years at the interest rate of 8 percent per annum compounded annually. What is future value of the annuity? $(1.08)^3 = 1.2597$ (a) 62644 (b) 62464 (c) 64928 (d) 63442 Ans : B [MTP April 23]
86.	Raju invests Rs. 20,000 every year in a deposit scheme starting from today for next 12 years. Assuming that interest rate on this deposit is 7% per annum compounded annually. What will be the future value of this annuity? Given that $(1+0.07)^{12} = 2.25219150$ (a) Rs. 540,576 (b) Rs. 382,813 (c) Rs. 643,483

	(d) Rs. 357,769 Ans : B [MTP April 23]
87.	How much amount is required to be invested every year so as to accumulate Rs. 5,00,000 at the end of 12 years if interest is compounded annually at 10% {Where $A(12,0.1) = 3.1384284$ } (a) Rs. 23381.65 (b) Rs. 24385.85 (c) Rs. 26381.65 (d) Rs. 28362.75 Ans : A [MTP April 23]
88.	A machine with useful life of 7 years costs Rs. 10,000 while another machine with useful life of 5 years costs Rs. 8000. The first machine saves labour expenses of Rs. 1900 annually and the second one saves labour expenses of Rs. 2200 annually. Determine the preferred course of action. Assume cost of borrowing as 10% compounded per annum. (a) 1st Machine should be purchased (b) 2nd Machine should be purchased (c) Information is not sufficient (d) None of these Ans : B [MTP April 23]
89.	The difference between compound interest and simple interest on an amount of Rs. 15,000 for 2 years is Rs. 96. What is the rate of interest per Annam? (a) 9% (b) 8% (c) 11% (d) 10% Ans : C [MTP April 23]
90.	A sum of money invested of compound interest double itself in four years. In how many years it become 32 times of itself at the same rate of compound interest. (a) 12 years (b) 16 years (c) 20 years (d) 18 years Ans : C [MTP April 23, July 24]
91.	A trust fund has invested Rs. 27000 money in two schemes 'A' and 'B' offering compound

	interest at the rate of 8% and 9% per annum respectively. If the total amount of interest accrued through these two schemes together in two years was Rs. 4818.30. What was the amount invested in schemes 'A'? (a) Rs. 12,000 (b) Rs. 12,500 (c) Rs. 13,000 (d) Rs. 12,500 Ans : A [MTP April 23]
92.	The effective annual rate of interest corresponding to a normal rate of 6% per annum payable half yearly is: (a) 6.06 % (b) 6.07 % (c) 6.08 % (d) 6.09 % Ans : D [MTP April 23, May 21]
93.	Find the effective annual rate of interest corresponding to a nominal rate of 8% per annum payable half-yearly is: (a) 8.8% (b) 8.23% (c) 8.6% (d) 8.16% Ans: (d) [RTP Jan 25]
94.	Find the present value of an ordinary annuity of 8 quarterly payments of Rs. 500 each, the rate of interest being 8% p.a. compound quarterly (a) 4275.00 (b) 4725.00 (c) 3662.50 (d) 3266.50 Ans : C [MTP April 23]
95.	Rs. 80,000 is invested to earn a monthly interest of Rs. 1200 at the rate of p.a. Simple interest. (a) 12% (b) 14% (c) 16% (d) 18% Ans : D [MTP April 23]
96.	If a simple interest on a sum of money at 6% p.a. for 7 years is equal to twice of simple

	interest on another sum for 9 years at 5% p.a. The ratio will be: (a) 2:15 (b) 7:15 (c) 15:7 (d) 1:7 Ans : (c) [MTP April 24, May 21, Nov 23, July 24]
97.	How much money is required to be invested every year as to accumulate Rs,6,00,000 at the end of 10 years, if interest is compounded annually at 10% rate of interest [Given : $(1.1)^{10} = 259734$ (a) Rs. 37,467 (b) Rs. 37,476 (c) Rs. 37,647 (d) Rs. 37,674 Ans : (c) [MTP April 24, Dec 23, Nov 22]
98.	The Scrap value of machine valued at Rs,10,00,000 after 15 years of depreciation is 10% per annum . (a) Rs. 215891.13 (b) Rs. 205891.13 (c) Rs. 225891.13 (d) None Ans : (b) [MTP April 24]
99.	The effective annual rate of interest corresponding to nominal rate 6% p.a. payable quarterly is: (a) 6.14% (b) 6.07% (c) 6.08% (d) 6.09% Ans : (a) [MTP April 24]
100.	1. If the difference between the compound interest compounded annually and simple interest on a certain amount at 10% per annum for two years is Rs. 372, then the principal amount is. (a) Rs. 37,000 (b) Rs. 37,200 (c) Rs. 37,500 (d) None of the above Ans : (b) [MTP April 24]
101.	A sum of money, lent out at simple interest, doubles itself in 8 years. Find in how many

	years will the sum become triple (three times) of itself at the same rate per cent ? (a) 16 years (b) 15 years (c) 20 years (d) None. Ans : (a) [MTP April 24]
102.	Two equal sums were lent out at 7% and 5% simple interest respectively. The interest earned on the two loans adds upto Rs. 960 for four years. Find the sum lent out. (a) Rs. 4000 (b) Rs.3000 (c) Rs. 5000 (d) Rs. 6000 Ans: (a) [MTP may 21]
103.	A sum of money amounts to Rs. 20,800 in 5 years and Rs. 22720 in 7 years. Find the principle and rate of interest. (a) Rs. 5000, 6% (b) Rs.16000, 6% (c) Rs.80000, 8% (d) Rs. 10000, 10% Ans: (b) [MTP May 21]
104.	The cost of machinery Rs.1,25,000 if its useful life estimated to the 20 years and the rate of depreciation of its cost is 10% p.a . Then scrap value of machinery is (given that $(0.9)^{20} = 0.1215$) (a) Rs. 15,187 (b) Rs. 15,400 (c) Rs. 15,300 (d) Rs. 15,250 Ans: (a) [MTP 1 and 2, May 21]
105.	How much amount is required to be invested every year so as to accumulate Rs. 3,00,000 at the end of 10 years, if interest is compounded annually at 10%? {Give $(1.1)^{10} = 2.5937$} (a) Rs. 18,823.65 (b) Rs. 18,828.65 (c) Rs. 18,832.65 (d) Rs. 18,182.65 Ans: (a) [MTP May 21, May 24]
106.	A sum amount to Rs. 1331 at a principal of

	Rs.1000 at 10% compounded annually. Find the time (a) 3.31 years (b) 4 years (c) 3 years (d) 2 years Ans: (c) [MTP May 21]
107.	Rs. 8,000 becomes Rs. 10,000 in two years at simple interest. The amount that will become Rs. 6,875 in 3 years at the same rate of interest is: (a) Rs. 4,850 (b) Rs. 5,000 (c) Rs. 5,500 (d) Rs. 5,275 Ans : (b) [MTP May 21]
108.	The effective rate equivalent to nominal rate of 6% compounded monthly is: (a) 6.05 (b) 6.17 (c) 6.26 (d) 6.07 Ans : (b) [MTP May 21, RTP May 25]
109.	A person borrows Rs. 5,000 for 2 years at 4% p.a. simple interest. He immediately lends to another person at $6\frac{1}{4}$ % p.a. for 2 years. Find his gain in the transaction per year: (a) Rs. 112.50 (b) Rs. 125 (c) Rs. 225 (d) Rs. 167.50 Ans : (a) [MTP May 21]
110.	How much money is to be invested every year so to accumulate Rs. 3,00,000 at the end of 10 years if interest is compounded annually at 10% [$A(10,0.1) = 15.9374$] (a) Rs.18823.65 (b) Rs.18833.64 (c) Rs.18223.60 (d) Rs.16823.65 Ans : (a) [MTP May 21]
111.	The simple interest on Rs. 600 for 9 months is Rs. 27. Find the interest rate. (a) 6% (b) 12%

	(c) 2.2 % (d) None of these Ans : A [MTP Dec 23]
112.	Miss Liza lent Rs. 4,000 in such a way that some amount was given to Mr. A at 3% p.a. S.I. and rest amount to was given to B at 5% p.a. S.I., the annual interest from both is Rs. 144, Find the amount lent to Mr. A (a) Rs. 2,800 (b) Rs. 1,200 (c) Rs. 2,500 (d) None Ans : A [MTP Dec 23, June 23]
113.	A certain sum of money was put at S.I. for 2.5 years at a certain rate of S.I. p.a. Had it been put at 4% higher rate, it would have fetched Rs. 500 more. Find the sum of money. (a) Rs. 4000 (b) Rs. 5000 (c) Rs. 6000 (d) None Ans : B [MTP Dec 23]
114.	Rs. 1,25,000 is borrowed at compound interest at the rate of 2% for the 1st year, 3% for the second year and 4% for the 3rd year. Find the amount to be paid after 3 years. (a) Rs. 125678 (b) Rs. 136587 (c) Rs. 163578 (d) Rs. 136578 Ans : D [MTP Dec 23, June 23]
115.	If the Compound Interest on a certain sum of money for 2 years at 4% p.a. be Rs.510, then its simple Interest (S.I) of same time at same rate of interest is (a) Rs.500 (b) Rs.510 (c) Rs.450 (d) None Ans : A [MTP Dec 23]
116.	How long will it take for a principal to double if money is worth 12% compounded monthly? (a) 4.25 years. (b) 5.81 years

	(c) 6 years (d) none of these Ans : B [MTP Dec 23]
117.	The difference between compound interest and simple interest on a certain sum for 2 years @ 10% p.a. is Rs. 100. Find the sum: (a) Rs. 10,100 (b) Rs. 10,950 (c) Rs. 10,000 (d) Rs. 9,900 Ans : C [MTP Dec 23]
118.	A debt of Rs.5000 with interest at the rate of 8% compounded quarterly is to be discharged by 8 equal quarterly payments, the first payment being due today. Find the size of each payment. (a) Rs. 573.86 (b) Rs. 669.17 (c) Rs. 399.26 (d) none of these Ans : B [MTP Dec 23]
119.	A Rs.1000 bond paying annual dividends at 8.5% will be redeemed at par at the end of 10 years. Find the purchase price of this bond if the investor wishes a yield rate of 8%. (a) Rs. 907.135 (b) Rs. 1033.54 (c) Rs. 945.67 (d) None of these Ans : B [MTP Dec 23, Nov 22]
120.	Find future value of annuity of ₹1000 made annually for seven years at interest rate 16% compounded annually. [Given that $(1.16)^7 = 2.8262$] (a) ₹11413.75 (b) ₹11000.35 (c) ₹8756 (d) ₹9892.34 Ans : (a) [MTP Nov 22]
121.	1. Assuming that the discount rate is 7% is p.a. How much would you pay to receive Rs. 500. Growing at 5% annually forever? (a) ₹2,500 (b) ₹5,000

	(c) ₹7,500 (d) ₹5,000 Ans : (d) [MTP Nov 22]
122.	Rajesh deposits ₹3,000 at the start of each quarter in his savings account. If the account earns interest 5.75% per annum compounded quarterly, how much money (in Rs.) will he have at the end of 4 years? [Given that $(1.014375)^{16} = 1.25654$] (a) ₹54,308.6 (b) ₹8,553.6 (c) ₹68,353.6 (d) ₹63,624.4 Ans : (a) [MTP Nov 22]
123.	The annual rate of simple interest is 12.5%. In how many years does principal double? (a) 11 years (b) 9 years (c) 8 years (d) 7 years Ans : (c) [MTP Nov 22]
124.	₹ 5000 is paid every year for 10 years to pay off a loan. What is the loan amount of interest rate be 14% p.a compounded annually? (a) ₹26,000.90 (b) ₹26080.55 (c) ₹15000.21 (d) ₹6,345.11 Ans : (b) [MTP Nov 22]
125.	Rs. 800 is invested at the end of each month in account paying interest 6% per year compounded monthly. What is the future value of annuity after 10th payment ? [Given that $(1.005)^{10} = 1.0511$] (a) ₹4444 (b) ₹8766 (c) ₹3491 (d) ₹8176 Ans : (d) [MTP Nov 22]
126.	Certain sum of money borrowed at simple interest to 2688 in three years and to ₹2784 in four years at the rate per annum equal to (a) 4%

	(b) 6% (c) 5% (d) 7% Ans : (a) [MTP Nov 22, RTP May 25]
127.	Ravi made of an investment of ₹15,000 in a scheme and at the time of maturity the time of maturity the amount was ₹25,000. If Compound Annual Growth Rate (CAGR) for this investment is 8.88%. Calculate the approximate number of years for which he has invested the amount. (a) 6 (b) 7.7 (c) 5.5 (d) 7 Ans : (a) [MTP Nov 22]
128.	Madhu takes a loan of Rs. 50,000 from ABC Bank LTD. The rate of interest is 10% per annum. The first instalment will be paid at the end of five year. Determine the amount (in ₹) of equal instalments, if Madhu wishes to repay the amount in five years. (a) ₹19,510 (b) ₹19,430 (c) ₹19,310 (d) ₹16,630 Ans : (c) [MTP Nov 22]
129.	Rajesh invests Rs. 20,000 per year in a stock index fund, with earns 9% per year, for the next ten years. What would be closest value of accumulated investment upon payment of the last installment? [Given: $(1.09)^{10} = 2.36736$] (a) ₹88,764.968 (b) ₹3,03,858.564 (c) ₹2,68,728.484 (d) ₹4,08,718.364 Ans : (b) [MTP Nov 22]
130.	An investment is earning compounded interest ₹100 invested in the year 2 accumulated to ₹105 by year 4. If ₹500 invested in the year 5, will become by year 10. (a) ₹364.80 (b) ₹564.80 (c) ₹464.80 (d) ₹664.80

	Ans : (b) [MTP Nov 22]
131.	An investor is saving to pay off an obligation of ₹15,250 which will due in seven years, if the investor is earning 7.5% simple interest rate per annum, he must deposit Rs. to meet the obligation. (a) ₹8,000 (b) ₹9,000 (c) ₹10,000 (d) ₹11,000 Ans : (c) [MTP Nov 22]
132.	The value of scooter is ₹1,00,000 find its depreciation is 10% p.a. Calculate total depreciation value at the end of seven years. (a) ₹47829.70 (b) ₹47000.90 (c) ₹42709 (d) ₹42,000 Ans : (a) [MTP1 and 2. Nov 22, RTP Jan 25]
133.	A man invests ₹12,000 at 10% p.a. and another sum of money at 20% p.a. for one year. The total investment earns at 14% p.a. simple interest the total investment is: (a) 8,000 (b) 20,000 (c) 14,000 (d) 16,000 Ans : (b) [MTP Nov 22]
134.	Find the effective rate of interest on ₹10,000 on which interest is payable half yearly at 5% p.a. (a) 5.06% (b) 4% (c) 0.4% (d) 3% Ans : (a) [MTP Nov 22]
135.	The difference between the CI and SI for 2 year is 21. If the rate of interest is 5%, the final principal is: (a) ₹8,200 (b) ₹4,800 (c) ₹8,000 (d) ₹8,400 Ans : (d) [MTP Nov 22]
136.	Mr. X lent some amount of money at 4% S.I.

	and he obtained ₹520 less than he lent in 5 years. The sum lent is (a) ₹620 (b) ₹650 (c) ₹750 (d) None of these Ans : (b) [MTP Nov 22]
137.	₹8,829 is invested into three different sectors in such a way that their amounts at 4% p.a. S.I. after 5 years; 6 and 8 years are equal. Find each part of the sum. (a) ₹3,069, ₹2,970; ₹2,790 (b) ₹3,089, ₹2,970; ₹2,790 (c) ₹3,609, ₹2,970; ₹2,790 (d) ₹3,069, ₹2,960; ₹2,760 Ans : (a) [MTP Nov 22]
138.	The amount charged for a defined length of time for uses of principal, generally on year basis is known as (a) Balance (b) Rate of Interest (c) Principal (d) Interest Ans : B [MTP Nov 23, July 24]
139.	Sachin deposited Rs.1,00,000 in his bank for 2 years at simple interest of 6%. How much interest would he earn? How much final value of deposit (a) Rs.6,000, Rs. 1,06,000 (b) Rs.15,000, Rs.1,15,000 (c) Rs.11,600, Rs.1,11,600 (d) Rs.12,000, Rs.1, 12,000 Ans : D [MTP Nov 23, July 24]
140.	The ratio of principal and the compounded interest value for three years (Compounded annually) is 216:127. The rate of interest is (a) 0.1777 (b) 0.1567 (c) 0.1666 (d) 0.1587 Ans : C [MTP Nov 23, July 24]
141.	The Compounded interest Rs.8000 for 6 months at 12% p.a payable quarterly is (a) Rs.487.20 (b) Rs.480

	(c) Rs.380 (d) None of these Ans : A [MTP Nov 23, July 24]
142.	A stock pays annually an amount of Rs. 10 from 6th year onwards. What is the present value of perpetuity, if the rate of return is 20% (a) 20.1 (b) 19.1 (c) 21.1 (d) 22.1 Ans : A [MTP Nov 23, July 24]
143.	A sum of money invested in compounded interest doubles itself in four years. In how many years it becomes 32 times of itself at the same rate of compound interest ? (a) 12 years (b) 16 years (c) 20 years (d) 24 years Ans : C [MTP Nov 23]
144.	If discounted rate is 14% per annum, then how much company has to pay receive Rs.280 growing at 9% annually forever ? (a) Rs.5600 (b) Rs.2800 (c) Rs.1400 (d) Rs.4200 Ans : A [MTP Nov 23]
145.	Mr. A invested Rs. x in an organisation, it amounts to Rs. 150 at 5% p.a. S.I. and to Rs. 100 at 3% p.a. S.I. Then the value of x is (a) Rs. 70 (b) Rs. 40 (c) Rs. 25 (d) None of these Answer (c) [MTP June 23]
146.	A certain sum of money becomes double at 5% rate of S.I. p.a. in a certain time, the time in years is (a) 10 years (b) 20 years (c) 25 years (d) None of these

	Answer (b) [MTP June 23]
147.	A certain sum of money amounts to Rs. 5,000 in 5 years at 10% p.a. In how many years will it amount to Rs. 6,000 at same rate of S.I p.a. (a) 10 years (b) 8 years (c) 6 years (d) None of these Answer (b) [MTP June 23]
148.	A certain sum of money amounts to double in 5 years placed at a compound interest. In how many years will it amount to 16 times at same rate of interest? (a) 12 years (b) 20 years (c) 24 years (d) None of these Answer (b) [MTP June 23]
149.	If the compound interest on a certain sum of money for 3 years at 5% p.a. be Rs.50.44, then the Simple Interest (S.I) is (a) Rs. 50 (b) Rs. 49 (c) Rs. 48 (d) None of these Answer (c) [MTP June 23]
150.	If the difference between C.I and S.I on a certain sum of money at 5% p.a. for 2 years is Rs. 1.50. Find the sum of money. (a) Rs. 600 (b) Rs. 500 (c) Rs. 400 (d) None of these Answer (a) [MTP June 23]
151.	The amount of an annuity due consisting of 15 annual payments invested at 8% effective is Rs. 10,000. Find the size of each payment. (a) Rs. 873.86 (b) Rs. 108.60 (c) Rs. 341.01 (d) None of these Answer (c) [MTP June 23]
152.	Find the purchase price of a Rs. 1000 bond redeemable at the paying annual dividends at

	4% if the yield rate is to be 5% effective. (a) Rs. 884.16 (b) Rs. 984.17 (c) Rs. 1084.16 (d) None of these Answer (b) [MTP June 23]
153.	If the interest rate on a loan as 1% per month, the effective annual rate of interest is: (a) 12% (b) 12.36% (c) 12.68% (d) 12.84% Ans : (c) [MTP July 24]
154.	Mr. X invests 'P' amount at Simple Interest rate 10% and Mr. Y invests 'Q' amount at Compound Interest rate 5% compounded annually. At the end of two years both get the same amount of interest, then the relation between two amounts P and Q is given by: (a) $P = 41Q / 80$ (b) $P = 41Q / 40$ (c) $P = 41Q / 100$ (d) $P = 41Q / 200$ Ans: (a) [MTP May 24]
155.	A company may obtain a machine either by leasing it for 5 years (useful life) at an annual rent of Rs. 2,000 or by purchasing the machine for Rs. 8,100. If the company can borrow money at 18% per annum, which alternative is preferable? (a) Leasing (b) Purchasing (c) Can't say (d) None of these Ans : (a) [MTP May 24]
156.	In _____ receipts / payments takes place forever. (a) Annuity (b) Perpetuity (c) Annuity regular (d) Annuity due Ans : (b) [MTP May 24]
157.	What annual payment will discharge a debt of Rs. 770 due in years, the rate of interest

	being 5% per annum? (a) Rs. 150 (b) Rs. 140 (c) Rs. 130 (d) None of these Ans : (b) [MTP May 24]
158.	A man invests an amount of Rs. 15,860 in the names of his three sons A, B and C in such a way that they get the same interest after 2,3 and 4 years respectively. If the rate of interest is 5%, then the ratio of amount invested in the name of A, B and C is. (a) 6 : 4 : 3 (b) 3 : 4 : 6

	(c) 30 : 12 : 5 (d) None of the above Ans : (a) [MTP May 24]
159.	A person pays Rs. 975 in monthly instalments, each instalment is less than former by Rs. 5. The amount of first instalment is Rs. 100. In what time will the entire amount be paid? (a) 26 months (b) 15 months (c) Both (a) & (b) (d) 18 months Ans : B [MTP Nov 23]

CHAPTER 5 : BASIC CONCEPTS OF PERMUTATIONS AND COMBINATIONS

Exercise 5(A)

1.	${}^4P_3$ is evaluated as (a) 43 (b) 34 (c) 24 (d) none of these Ans: (c)
2.	${}^4P_4$ is equal to (a) 1 (b) 24 (c) 0 (d) none of these Ans: (b)
3.	7 is equal to (a) 5040 (b) 4050 (c) 5050 (d) none of these Ans: (a)
4.	0 is a symbol equal to (a) 0 (b) 1 (c) Infinity (d) none of these Ans: (b)
5.	In ${}^nP_r$ is always (a) an integer (b) a fraction (c) a positive integer (d) none of these Ans: (a)
6.	in ${}^nP_r$, prime the restriction is (a) $n > r$ (b) $n \geq r$ (c) $n \leq r$ (d) none of these Ans: (b)
7.	In ${}^nP_r = n(n-1)(n-2) \dots (n-r+1)$, the number of factors is (a) n (b) r-1 (c) n - r (d) r

	Ans: (d)
8.	${}^nP_r$ can also written as (a) $\frac{ n}{ n-r}$ (b) $\frac{ n}{ r n-r}$ (c) $\frac{ r}{ n-r}$ (d) none of these Ans: (a)
9.	If ${}^nP_4 = 12 \times {}^nP_2$, the n is equal to (a) -1 (b) 6 (c) 5 (d) none of these Ans: (b)
10.	If, ${}^nP_3 : {}^nP_2 = 3:1$, then n is equal to (a) 7 (b) 4 (c) 5 (d) none of these Ans: (c)
11.	${}^{m+n}P_2 = 56$, ${}^mP_2 = 30$ then (a) $m = 6$ $n = 2$ (b) $m = 7$ $n = 1$ (c) $m=4$, $n = 4$ (d) none of these Ans: (b)
12.	if ${}^5P_r = 60$, then the value of r is (a) 3 (b) 2 (c) 4 (d) none of these Ans: (a)
13.	If ${}^{n_1+n_2}P_2 = 132$, ${}^{n_1-n_2}P_2 = 30$ then, (a) $n_1 = 6$, $n_2 = 6$ (b) $n_1 = 10$, $n_2 = 2$ (c) $n_1 = 9$, $n_2 = 3$ (d) none of these Ans: (c)
14.	The number of ways the letters of the word 'COMPUTER' can be rearranged is (a) 40,320

	(b) 40,319 (c) 40,318 (d) none of these Ans: (b) [SM, MTP May 20, Jan 25]
15.	The number of arrangements of the letters in the word 'FAILURE', so that vowels are always coming together is (a) 576 (b) 575 (c) 570 (d) none of these Ans: (a) [SM, MTP Nov 20]
16.	10 examination papers are arranged in such a way that the best and worst papers never come together. The number of arrangements is (a) $9!8$ (b) $10!$ (c) $8!9$ (d) none of these Ans: (c)
17.	n articles are arranged in such a way that 2 particular articles never come together. The number of such arrangements is (a) $(n-2)!(n-1)$ (b) $(n-1)!(n-2)$ (c) $n!$ (d) none of these Ans: (a)
18.	If 12 school teams are participating in a quiz contest, then the number of ways the first, second and third positions may be won is (a) 1,230 (b) 1,230 (c) 3,210 (d) none of these Ans: (b) [MTP May 20, Jan 25]
19.	The sum of all 4 digit number containing the digits 2, 4, 6, 8, without repetitions is (a) 1,33,330 (b) 1,22,220 (c) 1,33,320 (d) none of these Ans: (d)

20.	The number of 4 digit numbers greater than 5,000 can be formed out of the digits 3,4,5,6 and 7(No. digit is repeated). The number of such is (a) 72 (b) 27 (c) 70 (d) none of these Ans: (a)
21.	4 digit numbers to be formed out of the figures 0, 1, 2, 3, 4 (no digit is repeated) then number of such numbers is (a) 120 (b) 20 (c) 96 (d) none of these Ans: (c)
22.	The number of ways the letters of the word 'TRIANGLE' to be arranged so that the word 'angle' will be always present is (a) 20 (b) 60 (c) 24 (d) 32 Ans: (c)
23.	If the letters word 'DAUGHTER' are to be arranged so that vowels occupy the odd places, then number of different words are (a) 2,880 (b) 676 (c) 625 (d) 576 Ans: (a)

EXERCISE 5 B

1.	The number of ways in which 7 girls form a ring is (a) 700 (b) 710 (c) 720 (d) none of these Ans: (c)
2.	The number of ways in which 7 boys sit in a round table so that two particular boys may sit together is (a) 240 (b) 200 (c) 120 (d) none of these Ans: (a)
3.	If 50 different jewels can be set to form a necklace then the number of ways is (a) $\frac{1}{2} \times 50$ (b) $\frac{1}{2} \times 49$ (c) 49 (d) none of these Ans: (b)
4.	3 ladies and 3 gents can be seated at a round table so that any two and only two of the ladies sit together. The number of ways is (a) 70 (b) 27 (c) 72 (d) none of these Ans: (c)
5.	The number of ways in which the letters of the word 'DOGMATIC' can be arranged is (a) 40,319 (b) 40,320 (c) 40,321 (d) none of these Ans: (b)
6.	The number of arrangements of 10 different things taken 4 at a time in which one particular thing always occurs is (a) 2015 (b) 2016 (c) 2014 (d) none of these Ans: (b)
7.	The number of permutations of 10 different things taken 4 at a time in which one

	particular thing never occurs is (a) 3,020 (b) 3,025 (c) 3,024 (d) none of these Ans: (c)
8.	Mr. X and Mr. Y enter into a railway compartment having six vacant seats. The number of ways in which they can occupy the seats is (a) 25 (b) 31 (c) 32 (d) 30 Ans: (d)
9.	The number of numbers lying between 100 and 1000 can be formed with the digits 1, 2, 3, 4, 5, 6, 7 is (a) 210 (b) 200 (c) 110 (d) none of these Ans: (a)
10.	The number of numbers lying between 10 and 1000 can be formed with the digits 2, 3, 4, 0, 8, 9 is (a) 124 (b) 120 (c) 125 (d) none of these Ans: (c)
11.	In a group of boys the number of arrangement of 4 boys is 12 times the number of arrangements of 2 boys. The number of boys in the group is (a) 10 (b) 8 (c) 6 (d) none of these Ans: (c)
12.	The value of $\sum_{r=1}^{10} r \cdot {}^{11}P_r$ is (a) ${}^{11}P_{11}$ (b) ${}^{11}P_{11} - 1$ (c) ${}^{11}P_{11} + 1$ (d) none of these Ans: (b)
13.	The total number of 9 digit numbers of different digits is

	(a) 10 9 (b) 8 9 (c) 9 9 (d) none of these Ans: (c)
14.	The number of ways in which 6 men can be arranged in a row so that the particular 3 men sit together, is (a) ${}^4P_4$ (b) ${}^4P_4 \times {}^3P_3$ (c) $(3)^2$ (d) none of these Ans: (b)
15.	There are 5 speakers A, B, C, D and E. The number of ways in which A will speak always before B is (a) 24 (b) $ 4 \times 2 $ (c) 5 (d) none of these Ans: (a)
16.	There are 10 trains plying between Calcutta and Delhi. The number of ways in which a person can go from Calcutta to Delhi and return by a different train is (a) 99 (b) 90 (c) 80 (d) 17/6 Ans: (b)
17.	The number of ways in which 8 sweats of different sizes can be distributed among 8 persons of different ages so that the largest sweat always goes to be younger assuming that each one of them gets a sweat is (a) 8 (b) 5040 (c) 5039 (d) 8:12:9 Ans: (b)
18.	The number of arrangements in which the letters of the word 'MONDAY' be arranged so that the words thus formed begin with M and do not end with N is (a) 720

	(b) 120 (c) 96 (d) none of these Ans: (c) [SM, MTP April 24]
19.	The total number of ways in which six '+' and four '-' signs can be arranged in a line such that no two '-' signs occur together is (a) $ 7 / 3 $ (b) $ 6 \times 7 / 3 $ (c) 35 (d) none of these Ans: (c)
20.	The number of ways in which the letters of the word 'MOBILE' be arranged so that consonants always occupy the odd places is (a) 36 (b) 63 (c) 30 (d) none of these Ans: (a)
21.	5 persons are sitting in a round table in such way that Tallest Person is always on the right- side of the shortest person; the number of such arrangements is (a) 6 (b) 8 (c) 24 (d) none of these Ans: (a) [SM, MTP May 20, Jan 25]

EXERCISE 5C

1.	The value of ${}^{12}C_4 + {}^{12}C_3$ is

(86)

	(a) 715

	(b) 710 (c) 716 (d) none of these Ans: (a)
2.	If ${}^nP_r = 336$ and ${}^nC_r = 56$, then n and r will be (a) (3, 2) (b) (8, 3) (c) (7, 4) (d) none of these Ans: (b) [SM, MTP May 19]
3.	If ${}^{18}C_r = {}^{18}C_{r+2}$, the value of ${}^rC_5$ is (a) 55 (b) 50 (c) 56 (d) none of these Ans: (c)
4.	If ${}^nC_{r-1} = 56$, ${}^nC_r = 28$ and ${}^nC_{r+1} = 8$, then r is equal to (a) 8 (b) 6 (c) 5 (d) none of these Ans: (b)
5.	A person has 8 friends. The number of ways in which he may invite one or more of them to a dinner is. (a) 250 (b) 255 (c) 200 (d) none of these Ans: (b)
6.	A man has 5 friends. In how many ways can he invite one or more of his friends to dinner? (a) 30 (b) 31 (c) 32 (d) 10 Ans: (b) [MTP May 19]
7.	The numbers of ways in which a person can choose one or more of the four electrical appliances: T.V, Refrigerator, Washing Machine and a cooler is (a) 15 (b) 25 (c) 24 (d) none of these Ans: (a)

8.	If ${}^nC_{10} = {}^nC_{14}$, then ${}^{25}C_n$ is (a) 24 (b) 25 (c) 1 (d) none of these Ans: (b)
9.	Out of 7 gents and 4 ladies a committee of 5 is to be formed. The number of committees such that each committee includes at least one lady is (a) 400 (b) 440 (c) 441 (d) none of these Ans: (c)
10.	If ${}^{28}C_{2r} : {}^{24}C_{2-4} = 225 : 11$, then the value of r is (a) 7 (b) 5 (c) 6 (d) none of these Ans: (a)
11.	The number of diagonals in a decagon is (a) 30 (b) 35 (c) 45 (d) none of these Ans: (b)
12.	There are 12 points in a plane of which 5 are collinear. The number of triangles is (a) 200 (b) 211 (c) 210 (d) none of these Ans: (c)
13.	The number of straight lines obtained by joining 16 points on a plane, no three of them being on the same line is (a) 120 (b) 110 (c) 210 (d) none of these Ans: (a)
14.	At an election there are 5 candidates and 3 members are to be elected. A voter is entitled to vote for any number of candidates not greater than the number to be elected. The number of ways a voter chooses to vote is (a) 20 (b) 22

	(c) 25 (d) none of these Ans: (c)
15.	Every two persons shakes hands with each other in a party and the total number of hand shakes is 66. The number of guests in the party is (a) 11 (b) 12 (c) 13 (d) 14 Ans: (b)
16.	The number of parallelograms that can be formed from a set of four parallel lines intersecting another set of three parallel lines is (a) 6 (b) 18 (c) 12 (d) 19 Ans: (b)
17.	The number of ways in which 12 students can be equally divided into three groups is (a) 5775 (b) 7575 (c) 7755 (d) none of these Ans: (a)
18.	The number of ways in which 15 mangoes can be equally divided among 3 students is (a) $15/ 5^4$ (b) $15/ 5^3$ (c) $15/ 5^2$ (d) none of these Ans: (b)
19.	8 points are marked on the circumference of a circle. The number of chords obtained by joining these in pairs is (a) 25

	(b) 27 (c) 28 (d) none of these Ans: (c)
20.	A committee of 3 ladies and 4 gents is to be formed out of 8 ladies and 7 gents. Mrs. X refuses to serve in a committee in which Mr. Y is a member. The number of such committees is (a) 1530 (b) 1500 (c) 1520 (d) 1540 Ans: (d)
21.	If $500C92 = 499C92 + C91$ then n is (a) 501 (b) 500 (c) 502 (d) 499 Ans: (d)
22.	The Supreme Court has given a 6 to 3 decision upholding a lower court; the number of ways it can give a majority decision reversing the lower court is (a) 256 (b) 276 (c) 245 (d) 226 Ans: (a)
23.	Five bulbs of which three are defective are to be tried in two bulb points in a dark room. Number of trials the room shall be lighted is (a) 6 (b) 8 (c) 5 (d) 7 Ans: (d)

[SM, MTP Nov 22]

EXERCISE 5D

1.	The letters of the words 'CALCUTTA' and 'AMERICA' are arranged in all possible ways. The ratio of the number of their arrangements is (a) 1:2 (b) 2:1 (c) 2:2 (d) none of these Ans: (b)

2.	The ways of selecting 4 letters from the word 'EXAMINATION' is (a) 136 (b) 130 (c) 125 (d) none of these Ans: (a)
3.	The number of different words that can be formed with 12 consonants and 5 vowels by

	taking 4 consonants and 3 vowels in each word is (a) $^{12}C_4 \times ^5C_3$ (b) $^{17}C_7$ (c) $4950 \times 7!$ (d) none of these Ans: (c)
4.	Eight guests have to be seated 4 on each side of a long rectangular table. 2 particular guests desire to sit on one side of the table and 3 on the other side. The number of ways in which the sitting arrangements can be made is (a) 1732 (b) 1728 (c) 1730 (d) 1278 Ans: (b)
5.	A question paper contains 6 questions, each having an alternative. The number of ways an examinee can answer one or more questions is (a) 720 (b) 728 (c) 729 (d) none of these Ans: (b) [SM, MTP Nov 21]
6.	$^{51}C_{31}$ is equal to (a) $^{51}C_{20}$ (b) $2 \cdot ^{50}C_{20}$ (c) $2 \cdot ^{45}C_{15}$ (d) none of these Ans: (a)
7.	The number of words that can be made by rearranging the letters of the word APURNA so that vowels and consonants appear alternate is (a) 18 (b) 35 (c) 36 (d) none of these Ans: (c)
8.	The number of arrangement of the letters of the word 'COMMERCE' is (a) 8 (b) $8!/(2!2!2!)$ (c) $7!$ (d) none of these Ans: (b) and (c)
9.	A candidate is required to answer 6 out of

	12 questions which are divided into two groups containing 6 questions in each group. He is not permitted to attempt not more than four from any group. The number of choices are. (a) 750 (b) 850 (c) 800 (d) none of these Ans: (b)
10.	The results of 8 matches (Win, Loss or Draw) are to be predicted. The number of different forecasts containing exactly 6 correct results is (a) 316 (b) 214 (c) 112 (d) none of these Ans: (c)
11.	The number of ways in which 8 different beads be strung on a necklace is (a) 2500 (b) 2520 (c) 2250 (d) none of these Ans: (b)
12.	The number of different factors the number 75,600 has is (a) 120 (b) 121 (c) 119 (d) none of these Ans: (c)
13.	The number of 4 digit numbers formed with the digits 1, 1, 2, 2, 3, 4 is (a) 100 (b) 101 (c) 201 (d) none of these Ans: (d)
14.	The number of ways a person can contribute to a fund out of 1 ten-rupee note, a five-rupee note, a two rupee note and a one-rupee note is (a) 15 (b) 25 (c) 10 (d) none of these Ans: (a)
15.	The number of ways in which 9 things can be divided into two groups containing 2, 3, and

	4 things respectively is (a) 1250 (b) 1260 (c) 1200 (d) none of these Ans: (b)
16.	${}^{(n-1)}P_r + r \cdot {}^{(n-1)}P_{(n-1)}$ is equal to (a) ${}^nC_r$ (b) $ n /(r (n-r))$ (c) ${}^nP_r$ (d) none of these Ans: (c)
17.	$2n$ can be written as (a) $2\{1.3.5....(2n-1)\} n$ (b) $2^n n$ (c) $\{1.3.5....(2n-1)\}$ (d) none of these Ans: (a)
18.	The number of even numbers greater than 300 can be formed with the digits 1, 2, 3, 4, 5 without repetition is

	(a) 110 (b) 112 (c) 111 (d) none of these Ans: (c)
19.	5 letters are written and there are five letter-boxes. The number of ways the letters can be dropped into the boxes, are in each (a) 119 (b) 120 (c) 121 (d) none of these Ans: (b)
20.	${}^nC_1 + {}^nC_2 + {}^nC_3 + {}^nC_4 + ... + {}^nC_n$ equals (a) $2^n - 1$ (b) 2^n (c) $2^n + 1$ (d) none of these Ans: (a) [SM, MTP May 18, June 24]

Additional Question Bank, RTP and MTP

1.	There are 6 routes for journey from station A to station B. In how many ways you may go from A to B and return if for returning you make a choice of any of the routes? (a) 6 (b) 12 (c) 36 (d) 30 Ans: (c)
2.	As per question No.(1) if you decided to take the same route you may do it in number of ways. (a) 6 (b) 12 (c) 36 (d) 30 Ans: (a)
3.	As per question No. (1) if you decided not to take the same route you may do it in _____ number of ways (a) 6 (b) 12 (c) 36 (d) 30 Ans: (d)
4.	How many telephone connections may be allotted with 8 digits from the numbers

	0,1,2.....9 (a) 10^8 (b) $10!$ (c) ${}^{10}C_8$ (d) ${}^{10}P_8$ Ans: (a)
5.	In how many different ways 3 rings of a lock can not combine when each ring has digits 0,1,2.....9 leading to unsuccessful events? (a) 999 (b) 10^3 (c) 10 (d) 997 Ans: (a)
6.	A dealer provides you Maruti Car & Van in 2 body patterns and 5 different colours. How many choices are open to you? (a) 2 (b) 7 (c) 20 (d) 10 Ans: (c)
7.	3 persons go into a railway carriage having 8 seats. In how many ways they may occupy the seats? (a) ${}^8P_3$ (b) ${}^8C_3$

	(c) ${}^8C_5$ (d) None Ans: (a)
8.	Find how many five-letter words can be formed out of the word "LOGARITHMS" (the words may not convey any meaning) (a) ${}^{10}P_5$ (b) ${}^{10}C_5$ (c) ${}^9C_4$ (d) None Ans: (a)
9.	How many 4 digits numbers greater than 7000 can be formed out of the digits 3,5,7,8,9? (a) 24 (b) 48 (c) 72 (d) 50 Ans: (c)
10.	In how many ways 5 Sanskrit 3 English and 3 Hindi books be arranged keeping the books of the same language together? (a) $5! \times 3! \times 3! \times 3!$ (b) $5! \times 3! \times 3!$ (c) ${}^5P_3$ (d) None Ans: (a)
11.	In how many ways can 6 boys and 6 girls be seated around a table so that no 2 boys are adjacent? (a) $4! \times 5! \times 6!$ (b) ${}^6P_6$ (c) $5 \times {}^6P_6$ Ans: (b)
12.	In how many ways can 4 Americans and 4 English men be seated at a round table so that no 2 Americans may be together? (a) $4! \times 3! \times 4!$ (b) $3 \times {}^4P_4$ (c) ${}^4C_4$ Ans: (a)
13.	The chief ministers of 17 states meet to discuss the hike in oil price at a round table. In how many ways they seat themselves if the Kerala and Bengal chief ministers choose to sit together? (a) $15! \times 2!$ (b) $17! \times 2!$ (c) $16! \times 2!$ (d) None Ans: (a)

14.	The number of permutation of the word 'ACCOUNTANT' is (a) $(10!) / ((2!)^4)$ (b) $(10!) / ((2!)^3)$ (c) $10!$ (d) None Ans: (a)
15.	The number of permutation of the word 'ENGINEERING' is (a) $(11!) \times [(3!)^2(2!)^2]$ (b) $11!$ (c) $13!$ (d) None Ans: (a)
16.	The number of arrangements that can be made with the word 'ASSASSINATION' is (a) $(13!) / [3! \times 4! \times (2!)^2]$ (b) $(13!) / [3! \times 4! \times 2!]$ (c) $13!$ (d) None Ans: (a)
17.	How many numbers higher than a million can be formed with the digits 0,4,4,5,5,5,3? (a) 420 (b) 360 (c) 7 (d) None Ans: (b)
18.	The number of permutation of the word 'ALLAHABAD' is (a) $9! / (4! \times 2!)$ (b) $9! / 4!$ (c) $9!$ (d) None Ans: (a)
19.	In how many ways the vowels of the word 'ALLAHABAD' will occupy the even places? (a) 120 (b) 60 (c) 30 (d) None Ans: (b)
20.	How many arrangements can be made with the letter of the word 'MATHEMATICS' (a) $11! / (2!)^3$ (b) $11! / (2!)^2$ (c) $11!$ (d) None Ans: (a)
21.	In how many ways of the word 'MATHEMATICS' be arranged so that the

	vowels occur together? (a) $11! / (2!)^3$ (b) $(8! \times 4!) / (2!)^3$ (c) $12! / (2!)^3$ (d) None Ans: (b) [SM, MTP June 23]
22.	In how many ways can the letters of the word 'ARRANGE' be arranged? (a) 1,200 (b) 1,250 (c) 1,260 (d) 1,300 Ans: (c) [SM, MTP May 19]
23.	In how many ways the word 'ARRANGE' be arranged such that the 2 'R's come together? (a) 400 (b) 440 (c) 360 (d) None Ans: (c)
24.	In how many ways the word 'ARRANGE' be arranged such that the 2 'R's do not come together? (a) 1,000 (b) 900 (c) 800 (d) None Ans: (b)
25.	In how many ways the word 'ARRANGE' be arranged such that the 2 'R's and 2 'A's come together? (a) 120 (b) 130 (c) 140 (d) None Ans: (a)
26.	If ${}^nP_4 = 12$, ${}^nP_2$ the value of n is (a) 12 (b) 6 (c) 1 (d) None Ans: (b) [SM, MTP May 19]
27.	If $4 \cdot {}^nP_3 = 5 \cdot {}^{n-1}P_3$, the value of n is (a) 12 (b) 13 (c) 14

	(d) 15 Ans: (d)
28.	${}^nP_r / {}^{n-1}P_{r-1}$ is (a) n (b) $n!$ (c) $(n-1)!$ (d) ${}^nC_n$ Ans: (a)
29.	The total number of numbers less than 1000 and divisible by 5 formed with 0,1,2,...,9 such that each digit does not occur more than once in each number is (a) 150 (b) 152 (c) 154 (d) None Ans: (c)
30.	The number of ways in which 8 examination papers be arranged so that the best and worst papers never come together is (a) $8! - 2 \times 7!$ (b) $8! - 7!$ (c) $8!$ (d) None Ans: (a) [SM, MTP May 19]
31.	In how many ways can 4 boys and 3 girls stand in a row so that no two girls are together? (a) $5! \times 4! / 3!$ (b) ${}^5P_3 \times 3$ (c) ${}^5P_3 \times 2$ (d) None Ans: (a)
32.	In how many ways can 3 boys and 4 girls be arranged in a row so that all the three boys are together? (a) $4! \times 3!$ (b) $5! \times 3!$ (b) $7!$ (c) None Ans: (b)
33.	How many six digit numbers can be formed out of 4 5 9 no digits being repeated? (a) $6! - 5!$ (b) $6!$ (b) $6! + 5!$ (c) None Ans: (b)
34.	In terms of question No.(33) how many of them are not divisible by 5? (a) $6! - 5!$ (b) $6!$

	(b) $6! + 5!$ (c) None Ans: (a)
35.	In how many ways the word 'FAILURE' can be arranged so that the consonants occupy only the odd positions? (a) $4!$ (b) $(4!)^2$ (c) $7! + 3!$ (d) None Ans: (b)
36.	In how many ways can the word 'STRANGE' be arranged so that the vowels are never separated? (a) $6! \times 2!$ (b) $7!$ (b) $7! + 2!$ (c) None Ans: (a)
37.	In how many ways can the word 'STRANGE' be arranged so that the vowels never come together? (a) $7! - 6! \times 2!$ (b) $7! - 6!$ (c) ${}^7P_6$ (d) None Ans: (a)
38.	In how many ways can the word 'STRANGE' be arranged so that the vowels occupy only the odd places? (a) ${}^5P_5$ (b) ${}^5P_5 \times {}^4P_4$ (c) ${}^5P_5 \times {}^4P_2$ (d) None Ans: (c)
39.	In how many ways can the letters of the word 'STRANGE' be arranged so that the vowels never come together? (a) 3600 (b) 3686 (c) 5040 (d) 4050 Ans: (a) [MTP Nov 19]
40.	How many four digits number can be formed by using 1,2, ...7? (a) ${}^7P_4$ (b) ${}^7P_3$ (c) ${}^7C_4$ (d) None Ans: (a)

41.	How many four digits numbers can be formed by using 1,2,.....7 which are greater than 3400? (a) 500 (b) 550 (c) 560 (d) None Ans: (c)
42.	In how many ways it is possible to write the word 'ZENITH' in a dictionary? (a) ${}^6P_6$ (b) ${}^6C_6$ (c) ${}^6P_0$ (d) None Ans: (a)
43.	In terms of question No. (41) what is the rank or order of the word 'ZENITH' in the dictionary? (a) 613 (b) 615 (c) 616 (d) 618 Ans: (c)
44.	If ${}^{n+1}P_3 / {}^{n+1}P_3 = 5/12$ the value of n is (a) 8 (b) 4 (c) 5 (d) 2 Ans: (a)
45.	If ${}^{n+3}P_6 / {}^{n+2}P_4 = 14$ the value of n is (a) 8 (b) 4 (c) 5 (d) 2 Ans: (b)
46.	If ${}^7P_n + {}^7P_{n-3} = 60$ the value of n is n-3 (a) 8 (b) 4 (c) 5 (d) 2 Ans: (c)
47.	There are 4 routes for going from Dumdum to Sealdah and 5 routes for going from Sealdah to Chandni. In how many different ways can you go from Dumdum to Chandni via Sealdah? (a) 9 (b) 1 (c) 20 (d) None Ans: (c)
48.	In how many ways can 5 people occupy 8

	vacant chairs? (a) 5,720 (b) 6,720 (c) 7,720 (d) None Ans: (b)
49.	If there are 50 stations on a railway line how many different kinds of single first class tickets may be printed to enable a passenger to travel from one station to other? (a) 2,500 (b) 2,450 (c) 2,400 (d) None Ans: (b)
50.	How many six digits numbers can be formed with the digits 9, 5, 3, 1, 7, 0? (a) 600 (b) 720 (c) 120 (d) None Ans: (a)
51.	In terms of question No.(49) how many numbers will have 0's in ten's place? (a) 600 (b) 720 (c) 120 (d) None Ans: (c)
52.	How many words can be formed with the letters of the word 'SUNDAY'? (a) 6! (b) 5! (c) 4! (d) None Ans: (a)
53.	How many words can be formed beginning with 'N' with the letters of the word 'SUNDAY'? (a) 6! (b) 5! (c) 4! (d) None Ans: (b)
54.	How many words can be formed beginning with 'N' and ending in 'A' with the letters of the word 'SUNDAY'? (a) 6! (b) 5! (c) 4!

	(d) None Ans: (c)
55.	How many different arrangements can be made with the letters of the word 'MONDAY'? (a) 6! (b) 5! (c) 4! (d) None Ans: (a)
56.	How many different arrangements can be made with the letters of the word 'ORIENTAL'? (a) 6! (b) 5! (c) 4! (d) None Ans: (b)
57.	How many different arrangements can be made beginning with 'A' and ending in 'N' with the letters of the word 'MONDAY'? (a) 6! (b) 5! (c) 4! (d) None Ans: (c)
58.	How many different arrangements can be made beginning with 'A' and ending with 'N' with the letters of the word 'ORIENTAL'? (a) 6! (b) 5! (c) 4! (d) None Ans: (a)
59.	In how many ways can a consonant and a vowel be chosen out of the letters of the word 'LOGARITHM'? (a) 18 (b) 15 (c) 3 (d) None Ans: (a)
60.	In how many ways can a consonant and a vowel be chosen out of the letters of the word 'EQUATION'? (a) 19 (b) 16 (c) 4 (d) None Ans: (b)

61.	How many different words can be formed with the letters of the word 'TRIANGLE'? (a) 8! (b) 7! (c) 6! (d) $2! \times 6!$ Ans: (a)
62.	How many different words can be formed beginning with 'T' of the word 'TRIANGLE'? (a) 8! (b) 7! (c) 6! (d) $2! \times 6!$ Ans: (b)
63.	How many different words can be formed beginning with 'E' of the letters of the word 'TRIANGLE'? (a) 8! (b) 7! (c) 6! (d) $2! \times 6!$ Ans: (b)
64.	In question No. (60) how many of them will begin with 'T' and end with 'E' ? (a) 8! (b) 7! (c) 6! (d) $2! \times 6!$ Ans: (c)
65.	In question No.(60) how many of them have 'T' and 'E' in the end places? (a) 8! (b) 7! (c) 6! (d) $2! \times 6!$ Ans: (d)
66.	In question No. (60) how many of them have Consonants never together (a) $8! - 4! \times 5!$ (b) ${}^6P_3 \times 5!$ (c) $2! \times 5! \times 3!$ (d) ${}^4P_3 \times 5!$ Ans: (a)
67.	In question No. (60) how many of them have arrangements that no two vowels are together? (a) $8! - 4! \times 5!$ (b) ${}^6P_3 \times 5!$ (c) $2! \times 5! \times 3!$ (d) ${}^4P_3 \times 5!$ Ans: (b)

68.	In question No. (60) how many of them have arrangements that consonants and vowels are always together? (a) $8! - 4! \times 5!$ (b) ${}^6P_3 \times 5!$ (c) $2! \times 5! \times 3!$ (d) ${}^4P_3 \times 5!$ Ans: (c)
69.	In question No. (60) how many of them have arrangements that vowels occupy odd places? (a) $8! - 4! \times 5!$ (b) ${}^6P_3 \times 5!$ (c) $2! \times 5! \times 3!$ (d) ${}^4P_3 \times 5!$ Ans: (d)
70.	In question No.(60) how many of them have arrangements that the relative positions of the vowels and consonants remain unchanged? (a) $8! - 4! \times 5!$ (b) ${}^6P_3 \times 5!$ (c) $2! \times 5! \times 3!$ (d) $5! \times 3!$ Ans: (d)
71.	In how many ways the letters of the word 'FAILURE' can be arranged with the condition that the four vowels are always together? (a) $(4!)^2$ (b) 4! (c) 7! (d) None Ans: (a)
72.	In how many ways n books can be arranged so that two particular books are not together? (a) $(n - 2) \times (n - 1)!$ (b) $n \times n!$ (c) $(n - 2) \times (n - 2)!$ (d) None Ans: (a)
73.	In how many ways can 3 books on Mathematics and 5 books on English be placed so that books on the same subject always remain together? (a) 1,440 (b) 240 (c) 480 (d) 144 Ans: (a)
74.	6 papers are set in an examination out of which two are mathematical. In how many ways can the papers be arranged so that 2

	mathematical papers are together? (a) 1,440 (b) 240 (c) 480 (d) 144 Ans: (b)
75.	In question No.(73) will your answer be different if 2 mathematical papers are not consecutive? (a) 1,440 (b) 240 (c) 480 (d) 144 Ans: (c)
76.	The number of ways the letters of the word 'SIGNAL' can be arranged such that the vowels occupy only odd positions is (a) 1,440 (b) 240 (c) 480 (d) 144 Ans: (d)
77.	In how many ways can be letters of the word 'VIOLENT' be arranged so that the vowels occupy even places only? (a) 1,440 (b) 240 (c) 480 (d) 144 Ans: (d)
[SM, MTP April 24]	
78.	How many numbers between 1000 and 10000 can be formed with 1, 2, ...9? (a) 3,024 (b) 60 (c) 78 (d) None Ans: (a)
79.	How many numbers between 3000 and 4000 can be formed with 1, 2, ...6? (a) 3024 (b) 60 (c) 78 (d) None Ans: (b)
80.	How many numbers greater than 23,000 can be formed with 1, 2, ...5? (a) 3024 (b) 60 (c) 78

	(d) None Ans: (d)
81.	If you have 5 copies of one book, 4 copies of each of two books, 6 copies each of three books and single copy of 8 books you may arrange it in number of ways. (a) $39!/5! \times (4!)^2 \times (6!)^3$ (b) $39!/5! \times 8! \times (4!)^2 \times (6!)^3$ (c) $39!/5! \times 8! \times 4! \times (6!)^3$ (d) $39!/5! \times 8! \times 4! \times 6!$ Ans: (a)
82.	How many arrangements can be made out of the letters of the word "PERMUTATION"? (a) $\frac{1}{2} {}^{11}P_{11}$ (b) ${}^{11}P_{11}$ (c) ${}^{11}C_{11}$ (d) None Ans: (a)
83.	How many numbers greater than a million can be formed with the digits: One 0 Two 1 One 3 and Three 7? (a) 360 (b) 240 (c) 840 (d) 20 Ans: (a)
84.	How many arrangements can be made out of the letters of the word 'INTERFERENCE' so that no two consonant are together? (a) 360 (b) 240 (c) 840 (d) 20 Ans: (d)
85.	How many different words can be formed with the letter of the word "HARYANA"? (a) 360 (b) 240 (c) 840 (d) 20 Ans: (c)
86.	In question No.(84) how many arrangements are possible keeping 'H' and 'N' together? (a) 360 (b) 240 (c) 840 (d) 20 Ans: (b)
87.	In question No.(84) how many arrangements are possible beginning with 'H' and ending.

	with 'N'? (a) 360 (b) 240 (c) 840 (d) 20 Ans: (d)
88.	A computer has 5 terminals and each terminal is capable of four distinct positions including the positions of rest what is the total number of signals that can be made? (a) 20 (b) 1,020 (c) 1,023 (d) None Ans: (c)
89.	In how many ways can 9 letters be posted in 4 letter boxes? (a) 4^9 (b) 4^5 (c) ${}^9P_4$ (d) ${}^9C_4$ Ans: (a)
90.	In how many ways can 8 beads of different colour be strung on a ring? (a) $7! / 2$ (b) $7!$ (c) $8!$ (d) $8! / 2$ Ans: (a)
91.	In how many ways can 8 boys form a ring? (a) $7! / 3$ (b) $7!$ (c) $8!$ (d) $8! / 3$ Ans: (b)
92.	In how many ways 6 men can sit at a round table so that all shall not have the same neighbours in any two occasions? (a) $5! / 2$ (b) $5!$ (c) $(7!)^2$ (d) $7!$ Ans: (a)
93.	In how many ways 6 men and 6 women sit at a round table so that no two men are together? (a) $(5!) / 2$ (b) $5!$ (c) $5! 6!$ (d) $7!$ Ans: (c)
94.	In how many ways 4 men and 3 women are

	arranged at a round table if the women never sit together? (a) $6 \times 6!$ (b) $6!$ (c) $7!$ (d) None Ans: (d)
95.	In how many ways 4 men and 3 women are arranged at a round table if the women always sit together? (a) $6 \times 6!$ (b) $6!$ (c) $7!$ (d) None Ans: (d)
96.	A family comprised of an old man, 6 adults and 4 children is to be seated in a row with the condition that the children would occupy both the ends and never occupy either side of the old man. How many sitting arrangements are possible? (a) $4! \times 5! \times 7!$ (b) $4! \times 5! \times 6!$ (c) $2! \times 4! \times 5! \times 6!$ (d) None Ans: (d)
97.	The total number of sitting arrangements of 7 persons in a row if 3 persons sit together in a particular order is (a) $5!$ (b) $6!$ (c) $2! \times 5!$ (d) None Ans: (a)
98.	The total number of sitting arrangements of 7 persons in a row if 3 persons sit together in any order is (a) $5!$ (b) $6!$ (c) $2 \times 5!$ (d) None Ans: (b)
99.	The total number of sitting arrangements of 7 persons in a row if two persons occupy the end seats is (a) $5!$ (b) $6!$ (c) $2! \times 5!$ (d) None Ans: (c)
100.	The total number of sitting arrangements of

	7 persons in a row if one person occupies the middle seat is (a) 5! (b) 6! (c) $2! \times 5!$ (d) None Ans: (b)
101.	If all the permutations of the letters of the word 'CHALK' are written in a dictionary the rank of this word will be (a) 30 (b) 31 (c) 32 (d) None Ans: (c)
102.	In a ration shop queue 2 boys, 2 girls, and 2 men are standing in such a way that the boys the girls and the men are together each. The total number of ways of arranging the queue is (a) 42 (b) 48 (c) 24 (d) None Ans: (b)
103.	If you have to make a choice of 7 questions out of 10 questions set, you can do it in number of ways. (a) $^{10}C_7$ (b) $^{10}P_7$ (c) $7! \times ^{10}C_7$ (d) None Ans: (a)
104.	From 6 boys and 4 girls 5 are to be seated. If there must be exactly 2 girls the number of ways of selection is (a) 240 (b) 120 (c) 60 (d) None Ans: (b)
105.	In your office 4 posts have fallen vacant. In how many ways a selection out of 31 candidates can be made if one candidate is always included? (a) $^{30}C_3$ (b) $^{30}C_4$ (c) $^{31}C_3$ (d) $^{31}C_4$ Ans: (a)

106.	In question No .(104) would your answer be different if one candidate is always excluded? (a) $^{30}C_3$ (b) $^{30}C_5$ (c) $^{31}C_4$ (d) $^{31}C_5$ Ans: (b)
107.	Out of 8 different balls taken three at a time without taking the same three together more than once for how many number of times you can select a particular ball? (a) $^7C_2$ (b) $^8C_3$ (c) $^7P_2$ (d) $^8P_3$ Ans: (a)
108.	In question No .(106) for how many number of times you can select any ball? (a) $^7C_2$ (b) $^8C_3$ (c) $^7P_2$ (d) $^8P_3$ Ans: (b)
109.	In your college Union Election you have to choose candidates. Out of 5 candidates 3 are to be elected and you are entitled to vote for any number of candidates but not exceeding the number to be elected. You can do it in ways. (a) 25 (b) 5 (c) 10 (d) None Ans: (a)
110.	In a paper from 2 groups of 5 questions each you have to answer any 6 questions attempting at least 2 questions from each group. This is possible in number of ways. (a) 50 (b) 100 (c) 200 (d) None Ans: (c)
111.	Out of 10 consonants and 4 vowels how many words can be formed each containing 6 consonant and 3 vowels? (a) $10C_6 \times 4C_3$ (b) $10C_6 \times 3 \times 9$ (c) $10C_6 \times 3 \times 10$

	(d) None Ans: (b)
112.	A boat's crew consist of 8 men, 3 of whom can row only on one side and 2 only on the other. The number of ways in which the crew can be arranged is (a) $3C_1 \times (4!)^2$ (b) $3C_1 \times 4!$ (c) ${}^3C_1$ (d) None Ans: (a)
113.	A party of 6 is to be formed from 10 men and 7 women so as to include 3 men and 3 women. In how many ways the party can be formed if two particular women refuse to join it? (a) 4,200 (b) 600 (c) 3,600 (d) None Ans: (c)
114.	You are selecting a cricket team of first 11 players out of 16 including 4 bowlers and 2 wicket-keepers. In how many ways you can do it so that the team contains exactly 3 bowlers and 1 wicket-keeper? (a) 960 (b) 840 (c) 420 (d) 252 Ans: (a)
115.	In question No.(113) would your answer be different if the team contains at least 3 bowlers and at least 1 wicket-keeper? (a) 2,472 (b) 960 (c) 840 (d) 420 Ans: (a)
116.	A team of 12 men is to be formed out of n persons. Then the number of times 2 men 'A' and 'B' are together is (a) ${}^nC_{12}$ (b) ${}^{n-1}C_{11}$ (c) ${}^{n-2}C_{10}$ (d) None Ans: (c)
117.	In question No.(115) the number of times 3 men 'C' 'D' and 'E' are together is (a) ${}^nC_{12}$ (b) ${}^{n-1}C_{11}$

	(c) ${}^{n-2}C_{10}$ (d) ${}^{n-2}C_{10}$ Ans: (d)
118.	In question No.(115) it is found that 'A' and 'B' are three times as often together as 'C' 'D' and 'E' are. Then the value of n is (a) 32 (b) 23 (c) 9 (d) None Ans: (a)
119.	The number of combinations that can be made by taking 4 letters of the word 'COMBINATION' is (a) 70 (b) 63 (c) 3 (d) 136 Ans: (d)
120.	If ${}^{18}C_n = {}^{18}C_{n+2}$ then the value of n is _____ (a) 0 (b) -2 (c) 8 (d) None Ans: (c)
121.	If ${}^nC_6 + {}^nC_5 + {}^nC_4 + \dots + {}^nC_1 = 91/4$ then the value of n is (a) 15 (b) 14 (c) 13 (d) None Ans: (d)
122.	In order to pass PE-II examination minimum marks have to be secured in each of 7 subjects. In how many ways can a pupil fail? (a) 128 (b) 64 (c) 127 (d) 63 Ans: (c)
123.	In how many ways you can answer one or more questions out of 6 questions each having an alternative? (a) 728 (b) 729 (c) 128 (d) 126 Ans: (a)
124.	There are 12 points in a plane no 3 of which are collinear except that 6 points which are collinear. The number of different straight

	lines is (a) 50 (b) 51 (c) 52 (d) None Ans: (c)
125.	In question No.(123) the number of different triangles formed by joining the straight lines is (a) 220 (b) 20 (c) 200 (d) None Ans: (c)
126.	A committee is to be formed of 2 teachers and 3 students out of 10 teachers and 20 students. The numbers of ways in which this can be done is (a) $^{10}C_2 \times ^{20}C_3$ (b) $^9C_1 \times ^{20}C_3$ (c) $^{10}C_2 \times ^{19}C_3$ (d) None Ans: (a)
127.	In question No.(125) if a particular teacher is included the number of ways in which this can be done is (a) $^{10}C_2 \times ^{20}C_3$ (b) $^9C_1 \times ^{20}C_3$ (c) $^{10}C_2 \times ^{19}C_3$ (d) None Ans: (b)
128.	In question No.(125) if a particular student is excluded the number of ways in which this can be done is (a) $^{10}C_2 \times ^{20}C_3$ (b) $C_1 \times ^{20}C_3$ (c) $^{10}C_2 \times ^{19}C_3$ (d) None Ans: (c)
129.	In how many ways 21 red balls and 19 blue balls can be arranged in a row so that no two blue balls are together? (a) 1540 (b) 1520 (c) 1560 (d) None Ans: (a)
130.	In forming a committee of 5 out of 5 males and 6 females how many choices you have to make so that there are 3 males and 2

	females? (a) 150 (b) 200 (c) 1 (d) 461 Ans: (a)
131.	In question No .(129) how many choices you have to make if there are 2 males? (a) 150 (b) 200 (c) 1 (d) 461 Ans: (b)
132.	In question No .(129) how many choices you have to make if there is no female? (a) 150 (b) 200 (c) 1 (d) 461 Ans: (c)
133.	In question No .(129) how many choices you have to make if there is at least one female? (a) 150 (b) 200 (c) 1 (d) 461 Ans: (d)
134.	In question No .(129) how many choices you have to make if there are not more than 3 males? (a) 200 (b) 1 (c) 461 (d) 431 Ans: (d)
135.	From 7 men and 4 women a committee of 5 is to be formed. In how many ways can this be done to include at least one woman? (a) 441 (b) 440 (c) 420 (d) None Ans: (a)
136.	You have to make a choice of 4 balls out of one red one blue and ten white balls. The number of ways this can be done to always include the red ball is (a) $^{11}C_3$ (b) $^{10}C_3$ (c) $^{10}C_4$

	(d) None Ans: (a)
137.	In question No.(135) the number of ways in which this can be done to include the red ball but exclude the blue ball always is (a) $^{11}C_3$ (b) $^{10}C_3$ (c) $^{10}C_4$ (d) None Ans: (b)
138.	In question No. (135) the number of ways in which this can be done to exclude both the red and blues ball is (a) $^{11}C_3$ (b) $^{10}C_3$ (c) $^{10}C_4$ (d) None Ans: (c)
139.	Out of 6 members belonging to party 'A' and 4 to party 'B' in how many ways a committee of 5 can be selected so that members of party 'A' are in a majority? (a) 180 (b) 186 (c) 185 (d) 184 Ans: (b)
140.	A question paper divided into 2 groups consisting of 3 and 4 questions respectively carries the note "it is not required to answer all the questions. One question must be answered from each group". In how many ways you can select the questions? (a) 10 (b) 11 (c) 12 (d) 13 Ans: (c)
141.	The number of words which can be formed with 2 different consonants and 1 vowel out of 7 different consonants and 3 different vowels the vowel to lie between 2 consonants is (a) $3 \times 7 \times 6$ (b) $2 \times 3 \times 7 \times 6$ (c) $2 \times 3 \times 7$ (d) None Ans: (a)
142.	How many combinations can be formed of 8 counters marked 1 2...8 taking 4 at a time there being at least one odd and even

	numbered counter in each combination? (a) 68 (b) 66 (c) 64 (d) 62 Ans: (a)
143.	Find the number of ways in which a selection of 4 letters can be made from the word 'MATHEMATICS'. (a) 130 (b) 132 (c) 134 (d) 136 Ans: (d)
144.	Find the number of ways in which an arrangement of 4 letters can be made from the word MATHEMATICS'. (a) 1680 (b) 756 (c) 18 (d) 2,454 Ans: (d)
145.	In a cross word puzzle 20 words are to be guessed of which 8 words have each an alternative solution. The number of possible solution is (a) $(2 \times 8)^2$ (b) $^{20}C_{16}$ (c) $^{20}C_8$ (d) None Ans: (a)
146.	In how many ways 3 prizes out of 5 van be distributed amongst 3 brothers equally (a) 10 (b) 45 (c) 60 (d) 120 Ans : (c) [MTP May 18, Nov 21]
147.	There 12 questions to be answered to be Yes or No. How Many ways this can be answered (a) 1021 (b) 2048 (c) 4096 (d) none of these Ans: (c) [MTP May 18, Nov 21, June 24]
148.	$^{15}C_{3r} = ^{15}C_{r+3}$, then r is equal to (a) 2 (b) 3 (c) 4

	(d) 5 Ans : (b) [MTP May 18, Dec 23, June 24, May 22]
149.	A polygon has 44 diagonals then the number of sides are (a) 6 (b) 7 (c) 8 (d) 9 Ans : (d) [MTP May 18, June 24]
150.	Number ways of painting of a face of a cube by 6 colours is (a) 36 (b) 6 (c) 24 (d) 20 Ans : (b) [MTP May 18, June 24]
151.	The number of ways of painting the six faces of a cube with six different given colours is (a) 1 (b) 720 (c) 30 (d) 15 Ans: (c) [MTP June 24, Nov 22]
152.	How many Six-digit telephone numbers can be formed by using 10 distinct digits (a) 10^8 (b) 6^{10} (c) $10C_9$ (d) $10P_6$ Ans : (d) [MTP May 18]
153.	The Sum of all the 4 digits' numbers that can be formed with the digits 3,4,5,5 is (a) 18887 (b) 33333 (c) 38887 (d) 56661 Ans : (d) [MTP Nov 18]
154.	There are 12 points in a plane which are collinear no three points is a straight lie, number of triangular that can be formed with the vertices as there points are: (a) 216 (b) 220 (c) 110

	(d) 108 Ans : (a) [MTP Nov 18]
155.	The number of triangles that can be formed by choosing the vertices from set of 12 points, seven of which lie on the same straight line is (a) 185 (b) 175 (c) 115 (d) 105 Ans : (a) [MTP Nov 20, Nov 22, Dec 24, May 21]
156.	In a lawn different ways can four persons stand in a line for a group photograph (a) 24 (b) 16 (c) 8 (d) 64 Ans : (a) [MTP Nov 18]
157.	A Company wishes top simultaneously promotes three of its 8 department assistant mangers. In how many ways these promotions can take place? (a) 336 (b) 56 (c) 8 (d) 1680 Ans : (b) [MTP Nov 18]
158.	In how many ways can the letters of words "ACCOUNTANT" be arranged if vowels always occur together? (a) 7560 (b) 7650 (c) 7660 (d) 7550 Ans : (a) [MTP Nov 18]
159.	From a committee of 8 persons, in how many ways can we choose a chairman and a vice chairman assuming one person cannot hold more than one position? (a) 50 (b) 56 (c) 62 (d) none of these Ans : (b) [MTP Nov 18]

160.	Four letters are written and 4 envelopes are addressed. The number of ways in which all the 4 letters do not go into correct envelopes is (a) 511 (b) 1023 (c) 23 (d) 15 Ans : (c) [MTP Nov 18]
161.	${}^nP_r = 720$ and ${}^nC_r = 120$ then value of r is (a) 4 (b) 5 (c) 3 (d) 6 Ans. (c) [MTP May 19]
162.	An examination paper with 10 questions consists of 6 questions in Algebra and 4 questions in Geometry. At least one question from each section is to be attempted. In how many ways can this be done? (a) 945 (b) 100 (c) 1000 (d) none of these Ans : (a) [MTP May 20, Jan 25]
163.	In an examination a candidate has to pass in each of the 4 papers. In how many different ways can be failed? (a) 14 (b) 16 (c) 15 (d) None of these Ans : (c) [MTP Nov 20]
164.	In an election the number of candidates is one more than the number of members to be elected. If a voter can vote in 254 different ways; find the number of candidates. (a) 8 (b) 10 (c) 7 (d) None of these Ans : (a) [MTP Nov 20]
165.	If $\frac{1+3+5+\dots+n \text{ terms}}{2+4+6+\dots+50 \text{ terms}} = \frac{2}{51}$, then the value of 'n' (a) 9

	(b) 10 (c) 12 (d) 13 Ans : (b) [MTP Nov 18]
166.	${}^{n+2}C_n = 45$ find the value of n (a) 7 (b) 8 (c) 9 (d) 6 Ans : (b) [MTP Nov 18]
167.	In how many ways can a committee of 3 ladies and four gents be chosen from 8 ladies and 7 gents? (a) 1950 (b) 1920 (c) 1940 (d) 1960 Ans: (d) [MTP Nov 19]
168.	A box contains 7 red, 6 white and 4 blue balls. How many selections of three balls on of each colour? (a) 178 (b) 158 (c) 198 (d) 168 Ans: (d) [MTP Nov 19]
169.	The number of diagonals in a polygon of 6 sides (a) 9 (b) 8 (c) 6 (d) 12 Ans: (a) [MTP Nov 19]
170.	Find the value of n if $(n+1)! = 42 (n-1)!$ (a) 6 (b) -7 (c) 7 (d) -6 Ans : (a) [MTP Nov 21]
171.	If ${}^nP_{13} : {}^{n+1}P_{12} = 3:4$ Then value of n is (a) 15 (b) 14 (c) 13 (d) 12 Ans : (a)

	[MTP Nov 21]
172.	${}^5C_1 + {}^5C_2 + {}^5C_3 + {}^5C_4 + {}^5C_5$ is equal to _____ (a) 30 (b) 31 (c) 32 (d) 35 Ans : (b)
	[MTP Nov 21]
173.	How many different words can be formed with the letters of the word "LIBERTY" (a) 4050 (b) 5040 (c) 5400 (d) 4500 Ans : (b)
	[MTP May 22]
174.	If ${}^nP_2 = 20$ (${}^nP_2$) then the value of 'n' is (a) -2 (b) 7 (c) -2 and 7 both (d) None of these. Ans : (b)
	[MTP May 22]
175.	The number of ways of arranging 6 boys and 4 girls in a row so that all 4 girls are together is: (a) 6!. 4! (b) 2 (7! 4!) (c) 7! 4! (d) 2. (6! 4!) Ans : (c)
	[MTP May 22, RTP Sep 24]
176.	Find the number of even numbers greater than 100 that can be formed with the digits 0,1,2,3? (a) 10 (b) 15 (c) 20 (d) None of these Ans : 3
	[MTP May 22]
177.	In how many ways can the letters of the word "ALEGEBRA" be arranged without changing the relative order of the vowels? (a) 82 (b) 70 (c) 72 (d) None of these Ans : 3
	[MTP May 22]

178.	In how many ways can the letters of the word "DIRECTOR" be arranged so that the three vowels are never together? (a) 180 (b) 18000 (c) 18002 (d) None of these Ans : (b)
	[MTP May 22]
179.	The number ways in which 4 persons can occupy 9 vacant seats is (a) 6048 (b) 3024 (c) 1512 (d) 4536 Ans : (b)
	[MTP May 22]
180.	${}^{15}C_3 + {}^{15}C_{13}$ is equal to: (a) ${}^{16}C_3$ (b) ${}^{30}C_{16}$ (c) ${}^{15}C_8$ (d) ${}^{15}C_{15}$ Ans : (a)
	[MTP Nov 21]
181.	A box contains 3 pink caps, 2 purple caps and 4 orange caps. In how many ways they can be arranged so that the caps of the same colour come together. (Assume all caps of same colour are not identical) (a) 1724 (b) 1728 (c) 1732 (d) 1764 Ans : (b)
	[MTP Nov 21]
182.	The number of words that can be formed out of the letters of the word "ARTICLE" so that vowels occupy even places is (a) 36 (b) 144 (c) 574 (d) 754 Ans : (b)
	[MTP Nov 21, RTP Jan 25]
183.	In a group of students 80 can speak Hindi, 60 can speak English and 40 can speak Hindi and English both, then number of students is: (a) 100 (b) 140 (c) 180

	(d) 60 Ans : (a) [MTP Nov 21, RTP Jan 25]
184.	A boy has 3 library tickets and 8 books of his interest in the library. Of these 8, he does not want to borrow Mathematics part-II unless Mathematics part - 1 is also borrowed? In how many ways can he choose the three books to be borrowed? (a) 41 (b) 51 (c) 61 (d) 71 Ans : A [MTP Dec 24, May 21]
185.	An examination paper consists of 12 questions divided into two parts A and B. Part A contains 7 questions and part B contains 5 questions. A candidate is required to attempt 8 questions selecting at least 3 from each part. In how many maximum ways can the candidate select the questions ? (a) 35 (b) 175 (c) 210 (d) 420 Ans : d [MTP Dec 24, May 21 (1 and 2), RTP May 25]
186.	In how many ways can the letters of the word FAILURE be arranged so that the consonants may occupy only odd positions? (a) 576 (b) 476 (c) 376 (d) 276 Ans : a [MTP Dec 24, May 21]
187.	In how many ways can a party of 4 men and 4 women be seated at a circular table, so that no two women are adjacent ? (a) 164 (b) 174 (c) 144 (d) 154 Ans : c [MTP Nov 22, Dec 24, April 24]
188.	The number of 3-digit odd numbers can be formed using the digits 5,6,7, 8, 9. If repetition is allowed? (a) 56

	(b) 75 (c) 95 (d) 45 Ans : B [MTP April 23]
189.	The value n, r If ${}^nP_r = 3024$ and ${}^nC_r = 126$ (a) 9, 4 (b) 10, 7 (c) 12, 5 (d) 11, 6 Ans : A [MTP April 23]
190.	if there are 30 points in a plane of which 5 points are lies on the same line. Then the number of triangles can be formed ? (a) 650 (b) 580 (c) 4050 (d) 4060 Ans : C [MTP April 23]
191.	The number of ways of 4 boys and 3 girls are to be seated for a photograph in a row alternatively. (a) 24 (b) 164 (c) 144 (d) 336 Ans : C [MTP April 23]
192.	There are 40 students, 30 of them passed in English, 25 of them passed in Maths and 15 of them passed in both. Assuming that every Student has passed atleast in one subject. How many student's passed in English only but not in Maths. (a) 15 (b) 20 (c) 10 (d) 25 Ans : a [MTP Dec 24]
193.	A garden having 6 tall trees in a row. In how many ways 5 children stand, one in a gap between the trees in order to pose for a photograph? (a) 24 (b) 120 (c) 720 (d) 30 Ans : (b)

	[MTP April 24]
194.	A Supreme Court Bench consists of 5 judges. In how many ways, the bench can give a majority division ? (a) 10 (b) 5 (c) 15 (d) 16 Ans : (d) [MTP Dec 23, April 24, May 21]
195.	Given : $P(7, k) = 60 P(7, k-3)$. Then: (a) $k = 9$ (b) $k = 8$ (c) $k = 5$ (d) $k = 0$ Ans: (c) [MTP May 21]
196.	Find the number of combinations of the letters of the word COLLEGE taken four together: (a) 18 (b) 16 (c) 20 (d) 26 Ans : (a) [MTP May 21]
197.	Out of total 150 students, 45 passed in Accounts, 30 in Economics and 50 in Maths, 30 in both Accounts and Maths, 32 in both Maths and Economics, 35 in both Accounts and Economics, 25 students passed in all the three subjects. Find the numbers who passed atleast in anyone of the subjects: (a) 63 (b) 53 (c) 73 (d) None. Ans : (b) [MTP Nov 22, April 24]
198.	Six seats of articled clerks are vacant in a 'Chartered Accountant Firm'. How many different batches of candidates can be chosen out of ten candidates? (a) 216 (b) 210 (c) 220 (d) None Ans: (b) [MTP May 21]
199.	A bag contains 4 red, 3 black and 2 white

	balls. In how many ways 3 balls can be drawn from this bag so that they include at least one black ball? (a) 64 (b) 46 (c) 85 (d) None of the above Ans : A [MTP Nov 23]
200.	The number of words from the letters of the word BHARAT, in which B and H will never come together is (a) 360 (b) 240 (c) 120 (d) None of these Ans : B [MTP Nov 23]
201.	How many numbers of 3 digits can be made by using digits 3, 5, 6, 7 and 8. No. digit being repeated. (a) 120 (b) 60 (c) 100 (d) None of these Answer (b) [MTP June 23]
202.	If ${}^{20}C_r = {}^{20}C_{r+6}$. Then the value of r is (a) 10 (b) 7 (c) 11 (d) None of these Answer (b) [MTP June 23]
203.	Out of 20 members in a family, 11 like to take tea and 14 like coffee. Assume that each one likes at least one of the two drinks. Find how many like both coffee and tea: (a) 2 (b) 3 (c) 4 (d) 5 Answer(d) [MTP June 23]
204.	Let Z be the universal set for two sets - A and B. If $n(A) = 300$, $n(B) = 400$ and $n(A \cap B) = 200$, then $n(A' \cap B')$ is equal to 400 provided $n(Z)$ is equal to (a) 900 (b) 800

	(c) 700 (d) 600 Ans : (a) [MTP June 23, RTP Jan 25]
205.	How many words can be formed with the letters of the word 'ORIENTAL'. So that A and E always occupy odd places: (a) 540 (b) 8460 (c) 8640 (d) 8450 Ans : (c) [MTP Nov 22]
206.	A building contractor needs three helpers and ten men apply. In how many ways can these selections take place? (a) 36 (b) 15 (c) 150 (d) 120 Ans: (d) [RTP May 25]
207.	How many ways can 5 different trophies can be arranged on a shelf if one particular trophy must always be in the middle? (a) 24 (b) 120 (c) 48 (d) 144 Ans : (a) [MTP July 24]
208.	In how many ways the letters of the word "STADIUM" be arranged in such a way that the vowels all occur together? (a) $7! / 3!$ (b) $5! 4!$ (c) $5! 3!$ (d) $7! 3!$ Ans : (c) [MTP July 24]
209.	In how many ways can 5 boys and 3 girls sit in a row so that no two girls are together (a) 14,400 (b) 14,000 (c) 14,425 (d) 12,400 Ans : (a) [MTP Nov 22, July 24]
210.	A user wants to create a password using 4 lowercase letters (a-z) and 3 uppercase letters (A-Z). No letter can be repeated in

	any form. In how many ways can the password be created if the password must start with an uppercase letter? (a) $26 \times 25 \times 24 \times 23 \times 22 \times 5 \times 21$ (b) $26 \times 25 \times 24 \times 23 \times 22 \times 2 \times 21$ (c) $26 \times 5 \times 25 \times 24 \times 23 \times 2 \times 22 \times 21$ (d) $6 \times 26 \times 25 \times 24 \times 23 \times 22 \times 21$ Ans : (a) [MTP July 24]
211.	In how many ways can 4 people be selected at random from 6 boys and 4 girls if there are exactly two girls? (a) 90 (b) 360 (c) 92 (d) 480 Ans : (a) [MTP Nov 22]
212.	How many different groups of 3 people can be formed from a group of 5 people? (a) 5 (b) 6 (c) 10 (d) 9 Ans : (c) [MTP Nov 22]
213.	How many numbers can be formed with the help of 2, 3, 4, 5, 6, 1 which is not divisible by 5, given that it is a five digit number and digits are not repeating? (a) 1200 (b) 400 (c) 600 (d) 1400 Ans : (c) [MTP Nov 22]
214.	In a town of 20,000 families it was found that 40% families buy newspaper A, 20% families buy newspaper B and 10% families buy newspaper C, 5% families buy A and B, 3% buy B and C and 4% buy A and C. If 2% families buy all the three newspaper, then the number of families which buy A only is: (a) 6600 (b) 6300 (c) 5600 (d) 600. Ans : (a) [MTP May 24]
215.	Five balls of different colours are to be placed in three boxes of different sizes.

	Each box can hold all the five balls. In how many different ways can we place the balls so that no box remains empty? (a) 100 (b) 120 (c) 150 (d) None of these Ans : (c) [MTP May 24]
216.	The number of ways that 12 prizes can be divided among 4 students so that each may have 3 prizes is: (a) 15,400 (b) 15,000 (c) 14,400 (d) 369600 Ans : (d) [MTP May 24]
217.	In an election, there are five candidates contesting for three vacancies; an elector can vote any number of candidates not exceeding the number of vacancies. In how many ways can one cast his votes? (a) 12 (b) 14 (c) 25 (d) None of these Ans : (c) [MTP May 24]
218.	The average of marks obtained by 120 students in a certain examination is 135. If the average marks of passed students is 39 and that of the failed students is 15; what is the number of students who passed in the examination? (a) 100 (b) 150 (c) 200 (d) None of these Ans : (a) [MTP May 24]
219.	A room has 10 doors. In how many ways can a man enter the room by one door and come out by a different door. (a) 90 (b) 100 (c) 50 (d) None of these Ans : (a) [MTP May 24]
220.	If from a population with 25 members, a random sample without replacement of 2 members is taken, the number of all such samples is (a) 300 (b) 625 (c) 50 (d) 600 Ans : (a) [MTP May 24]
221.	There are 5 books on English, 4 Books on Tamil and 3 books on Hindi. In how many ways can these books be placed on a shelf if the books on the same subjects are to be together? (a) 1,36,800 (b) 1,83,600 (c) 1,03,680 (d) 1,63,800 Ans : C [MTP Dec 23]
222.	The maximum number of points of intersection of 10 circles will be : (a) 2 (b) 20 (c) 90 (d) 180 Ans : C [MTP Dec 23]
223.	From a group of 200 persons, 100 are interested in music, 70 in photography and 40 in swimming, furthermore 40 are interested in both music and photography, 30 in both music and swimming, 20 in photography and swimming and 10 in all the three. How many are interested in photography but not in music and swimming? (a) 30 (b) 15 (c) 25 (d) 20 Ans : D
224.	If $A = \{p, q, r, s\}$, $B = \{q, s, t\}$, $C = \{m, q, n\}$. Find $C - [A \cap B]$ (a) $\{m, n\}$ (b) $\{p, q\}$ (c) $\{r, s\}$ (d) $\{p, r\}$ Ans : A [MTP Dec 23]

CHAPTER 6: SEQUENCE AND SERIES - ARITHMETIC AND GEOMETRIC PROGRESSIONS

Exercise 6(A)

1.	The nth element of the sequence 1,3,5,7,.....is (a) n (b) 2n-1 (c) 2n+1 (d) None of these Ans:-(b) [SM, MTP Nov 18]
2.	The nth element of the sequence -1,2,-4,8.....is (a) $(-1)^n 2^{n-1}$ (b) 2^{n-1} (c) 2^n (d) None of these Ans:-(a) [MTP May 19]
3.	$\sum_{i=4}^7 \sqrt{2i-1}$ can be written as (a) $\sqrt{7} + \sqrt{9} + \sqrt{11} + \sqrt{13}$ (b) $2\sqrt{7} + 2\sqrt{9} + 2\sqrt{11} + 2\sqrt{13}$ (c) $2\sqrt{7} + 2\sqrt{9} + 2\sqrt{11} + 2\sqrt{13}$ (d) None of these Ans:-(a)
4.	The sum to ∞ of the series -5,25,-125,625,.....can be written as (a) $\sum_{k=1}^{\infty} (-5)^k$ (b) $\sum_{k=1}^{\infty} 5^k$ (c) $\sum_{k=1}^{\infty} -5^k$ (d) None of these Ans:-(a)
5.	The first three terms of sequence when nth term t_n is n^2-2n are (a) -1,0,3 (b) 1,0,2 (c) -1, 0,-3 (d) None of these Ans:-(a)
6.	Which term of the progression -1,-3,-5,.....is -39 (a) 21 st

	(b) 20 th (c) 19 th (d) None of these Ans:-(b)
7.	The value of x such that 8x + 4, 6x-2, 2x+7 will form an AP is (a) 15 (b) 2 (c) 15/2 (d) None of these Ans:-(c)
8.	The m th term of an A. P. is n and n th term is m. The r th term of it is (a) m + n + r (b) n + m -2r (c) m + n + r/2 (d) m + n - r Ans:-(d)
9.	The number of terms of the series $10 + 9\frac{2}{3} + 9\frac{1}{3} + 9 + \dots$ Will amount to 155 is (a) 30 (b) 31 (c) 32 (d) None of these Ans :-(a,b)
10.	The nth term of the series whose sum to n terms is $5n^2 + 2n$ is (a) 3n-10 (b) 10n-2 (c) 10n-3 (d) None of these Ans:-(c)
11.	The 20 th term of the progression 1,4,7,10.....is (a) 58 (b) 52 (c) 50 (d) None of these Ans:-(a)
12.	The last term of the series 5,7,9.....to 21

	terms is (a) 44 (b) 43 (c) 45 (d) None of these Ans:-(c)
13.	The sum of the series 9,5,1,.....to 100 term is (a) 8.7 (b) 7.8 (c) 7.7 (d) None of these Ans:-(b)
14.	The sum of the series 9, 5, 1,.... to 100 terms is (a) -18,900 (b) 18,900 (c) 19,900 (d) None of these Ans:-(a)
15.	The two arithmetic means between -6 and 14 is (a) $\frac{2}{3}, \frac{1}{3}$ (b) $(\frac{2}{3}, 7\frac{1}{3})$ (c) $(-\frac{2}{3} - 7\frac{1}{3})$ (d) None of these Ans:-(b)
16.	The sum of three integers in AP is 15 and their product is 80. The integers are (a) 2, 8, 5 (b) 8, 2, 5 (c) 2, 5, 8 (d) 8, 5, 2 Ans:- (c,d)
17.	The sum of n terms of an AP is $3n^2 + 5n$. The series is (a) 8, 14, 20, 26 (b) 8, 22, 42, 68 (c) 22, 68, 114, ... (d) none of these Ans:-(a)
18.	The number of numbers between 74 and 25,556 divisible by 5 is (a) 5,090 (b) 5,097 (c) 5,095 (d) None of these Ans:-(b)
19.	The pth term of an AP is $(3p - 1)/6$. The sum of the first n terms of the AP is (a) $n(3n + 1)$ (b) $n(3n + 1)/12$

	(c) $n/12 (3n - 1)$ (d) None of these Ans:-(b)
20.	The arithmetic mean between 33 and 77 is (a) 50 (b) 45 (c) 55 (d) None of these Ans:-(c)
21.	The 4 arithmetic means between -2 and 23 are (a) 3, 13, 8, 18 (b) 18, 3, 8, 13 (c) 3, 8, 13, 18 (d) None of these Ans:-(c)
22.	The first term of an A.P is 14 and the sums of the first five terms and the first ten terms are equal in magnitude but opposite in sign. The 3 rd term of the AP is (a) 6 (4/11) (b) 6 (c) 4/11 (d) None of these Ans:-(a)
23.	The sum of a certain number of terms of an AP series -8,-6,-4,.....is 52. The number of terms is (a) 12 (b) 13 (c) 11 (d) None of these Ans:-(b)
24.	The first and the last term of an A are -4 and 146. The sum of the terms is 7171. The number of terms is (a) 101 (b) 100 (c) 99 (d) None of these Ans:-(a) [SM, MTP Jan 25, May 20, Nov 22]
25.	The sum of the series $3\frac{1}{2} + 7 + 10\frac{1}{2} + 14 + \dots$ (a) 530 (b) 535 (c) $535\frac{1}{2}$ (d) None of these Ans:-(c)

Exercise 6(B)

1.	The 7 th term of the series 6, 12, 24,.. Is (a) 384 (b) 834 (c) 438 (d) None of these Ans:- (a)
2.	t_8 of the series 6, 12, 24,...is (a) 786 (b) 768 (c) 867 (d) None of these Ans:- (b)
3.	t_{12} of the series -128, 64, -32, ... is (a) -1/16 (b) 16 (c) 1/16 (d) None of these Ans:- (c)
4.	The 4 th term of the series 0.04, 0.2, 1, ... is (a) 0.5 (b) 1/2 (c) 5 (d) None of these Ans:-(c)
5.	The last term of the series 1,2,4..... to 10 terms is (a) 512 (b) 256 (c) 1024 (d) None of these Ans:-(a)
6.	The last term of the series 1, -3, 9, -27 up to 7 terms is (a) 297 (b) 729 (c) 927 (d) None of these Ans:-(b)

7.	The last term of the series $x^2, x, 1, \dots$ to 31 terms is (a) X^{28} (b) $1/x$ (c) $1/x^{28}$ (d) None of these Ans:-(c)
8.	The sum of the series -2,6, -18, ... to 7 terms is (a) -1094 (b) 1094 (c) -1049 (d) None of these Ans:-(a)
9.	The sum of the series 243, 81, 27, ... to 8 terms is (a) 36 (b) $36\frac{13}{30}$ (c) $36\frac{1}{9}$ (d) None of these Ans:-(d)
10.	The sum of the series $\frac{1}{\sqrt{3}} + 1 + \frac{3}{\sqrt{3}} + \dots$ to 18 terms is (a) $9841\frac{(1+\sqrt{3})}{\sqrt{3}}$ (b) 9841 (c) $\frac{9841}{\sqrt{3}}$ (d) None of these Ans:-(a)
11.	The second term of a G P is 24 and the fifth term is 81. The series is (a) 16, 36, 24, 54,... (b) 24, 36, 53,... (c) 16, 24, 36, 54,... (d) none of these Ans:-(c)

[SM, MTP Nov 21]

12.	The sum of 3 numbers of a G P is 39 and their product is 729. The numbers are (a) 3, 27, 9 (b) 9, 3, 27 (c) 3, 9, 27 (d) None of these Ans:-(c)
13.	In a G. P, the product of the first three terms is $27/8$. The middle term is (a) $3/2$ (b) $2/3$ (c) $2/5$ (d) None of these Ans:-(a)
14.	If you save 1 paise today, 2 paise the next day 4 paise the succeeding day and so on, then your total savings in two weeks will be (a) Rs. 163 (b) Rs. 183 (c) Rs. 163.83 (d) None of these Ans:-(c)
15.	Sum of n terms of the series $4 + 44 + 444 + \dots$ is (a) $4/9 (10/9 (10^n - 1) - n)$ (b) $10/9 (10^n - 1) - n$ (c) $4/9 (10^n - 1) - n$ (d) none of these Ans:-(a) [SM, MTP May 24]
16.	Sum of n terms of the series $0.1 + 0.11 + 0.111 + \dots$ is (a) $1/9 \{n - (1 - (0.1)^n)\}$ (b) $1/9 (n - (1 - (0.1)^n)/9)$ (c) $n - 1 - (0.1)^n/9$ (d) None of these Ans:-(b)
17.	The sum of the first 20 terms of a G. P is 244 times the sum of its first 10 terms. The common ratio is (a) $\pm\sqrt{3}$ (b) ± 3 (c) $\sqrt{3}$ (d) None of these Ans:-(a)

18.	Sum of the series $1+3+9+27 + \dots$ is 364. The number of terms is (a) 5 (b) 6 (c) 11 (d) None of these Ans:-(b)
19.	The product of 3 numbers in G P is 729 and the sum of squares is 819. The numbers are (a) 9, 3, 27 (b) 27, 3, 9 (c) 3, 9, 27 (d) None of these Ans:-(c)
20.	The sum of the series $1 + 2 + 4 + 8 + \dots$ to n term (a) $2^n - 1$ (b) $2n - 1$ (c) $1/2^n - 1$ (d) None of these Ans:-(a)
21.	The sum of the infinite GP $14, -2, + 2/7, -2/49, + \dots$ is (a) $4(1/12)$ (b) $12(1/4)$ (c) 12 (d) None of these Ans:-(b)
22.	The sum of the infinite G. P. $1 - 1/3 + 1/9 - 1/27 + \dots$ is (a) 0.33 (b) 0.57 (c) 0.75 (d) None of these Ans:-(c)
23.	The number of terms to be taken so that $1 + 2 + 4 + 8 + \dots$ will be 8191 is (a) 10 (b) 13 (c) 12 (d) None of these Ans:-(b)
24.	Four geometric means between 4 and 972 are (a) 12, 36, 108, 324 (b) 12, 24, 108, 320 (c) 10, 36, 108, 320 (d) None of these Ans:-(a) [SM, MTP April 23]

Exercise 6(C)

1.	Three numbers are in AP and their sum is 21. If 1, 5, 15 are added to them respectively, they form a G. P. The numbers are (a) 5, 7, 9 (b) 9, 5, 7 (c) 7, 5, 9 (d) None of these Ans:-(a) [SM, MTP Jan 25, May 20]
2.	The sum of $1 + 1/3 + 1/3^2 + 1/3^3 + \dots + 1/3^{n-1}$ is (a) $2/3$ (b) $3/2$ (c) $4/5$ (d) None of these Ans:-(d)
3.	The sum of the infinite series $1 + 2/3 + 4/9 + \dots$ is (a) $1/3$ (b) 3 (c) $2/3$ (d) None of these Ans:-(b) [SM, MTP May 19]
4.	The sum of the first two terms of a G.P. is $5/3$ and the sum to infinity of the series is 3. The common ratio is (a) $1/3$ (b) $2/3$ (c) $-2/3$ (d) none of these Ans:-(b,c) [SM, MTP May 19]
5.	If p, q and r are in A.P. and x, y, z are in G.P. then $x^{q-r} \cdot y^{r-p} \cdot z^{p-q}$ is equal to (a) 0 (b) -1 (c) 1 (d) None of these Ans:-(c) [SM, MTP Nov 20(Similar)]

6.	The sum of three numbers in G.P is 70. If the two extremes by multiplied each by 4 and the mean by 5, the products are in AP. The numbers are (a) 12,18,40 (b) 10,20,40 (c) 40,20,15 (d) None of these Ans:-(b), (c) [SM, MTP Jan 25, may 20]
7.	The sum of 3 numbers in A.P. is 15. If 1, 4 and 19 be added to them respectively, the results are in G.P. The numbers are (a) 26, 5, -16 (b) 2, 5, 8 (c) 5, 8, 2 (d) None of these Ans:-(a,b)
8.	Given x, y, z are in G.P. and $x^p = y^q = z^r$, then $1/p, 1/q, 1/r$ are in (a) A.P. (b) G.P. (c) Both A.P. and G.P (d) None of these Ans:-(a)
9.	If the terms 2x, (x+10) and (3x+2) be in A.P., the value of x is (a) 7 (b) 10 (c) 6 (d) None of these Ans:-(c)
10.	If A be the A.M. of two positive unequal quantities x and y and be their G. M, then (a) $A < G$ (b) $A > G$ (c) $A \geq G$ (d) $A \leq G$ Ans:-(b)
11.	The A.M. of two positive numbers is 40 and their G. M. is 24. The numbers are (a) (72, 8) (b) (70, 10) (c) (60, 20) (d) none of these Ans:-(a)

12.	Three numbers are in A.P. and their sum is 15. If 8, 6, 4 be added to them respectively, the numbers are in G.P. The numbers are (a) 2, 6, 7 (b) 4, 6, 5 (c) 3, 5, 7 (d) none of these Ans:-(c)
13.	The sum of four numbers in G. P. is 60 and the A.M. of the first and the last is 18. The numbers are (a) 4, 8, 16, 32 (b) 4, 16, 8, 32 (c) 16, 8, 4, 20 (d) none of these Ans:-(a)
14.	A sum of Rs.6240 is paid off in 30 instalments such that each instalment is Rs. 10 more than the preceding installment. The value of the 1 st instalment is (a) Rs. 36 (b) Rs. 30 (c) Rs. 60 (d) None of these Ans:-(d)
15.	The sum of $1.03 + (1.03)^2 + (1.03)^3 + \dots$ to n terms is (a) $103((1.03)^n - 1)$ (b) $103/3((1.03)^n - 1)$ (c) $(1.03)^n - 1$ (d) None of these Ans:-(b)
16.	If x, y, z are in A.P. and x, y, (z + 1) are in G.P. then (a) $(x - z)^2 = 4x$ (b) $z^2 = (x - y)$ (c) $z = x - y$ (d) none of these Ans:-(a)
17.	The numbers x, 8, y are in G.P. and the numbers x, y, -8 are in A.P. The value of x and y are (a) (-8, -8) (b) (16, 4) (c) (8, 8) (d) none of these Ans:-(a,b)

18.	The nth term of the series 16, 8, 4,..... in $1/2^{17}$. The value of n is (a) 20 (b) 21 (c) 22 (d) none of these Ans:-(c)
19.	The sum of n terms of a G.P. whose first terms 1 and the common ratio is $1/2$, is equal to $1\frac{127}{128}$. The value of n is (a) 7 (b) 8 (c) 6 (d) None of these Ans:-(b)
20.	t_4 of a G.P. in x, $t_{10} = y$ and $t_{16} = z$. Then (a) $x^2 = yz$ (b) $z^2 = xy$ (c) $y^2 = zx$ (d) None of these Ans:-(c)
21.	If x, y, z are in G.P., then (a) $y^2 = xz$ (b) $y(z^2 + x^2) = x(z^2 + y^2)$ (c) $2y = x+z$ (d) None of these Ans:-(a)
22.	The sum of all odd numbers between 200 and 300 is (a) 11,600 (b) 12,490 (c) 12,500 (d) 24,750 Ans:-(c)
23.	The sum of all natural numbers between 500 and 1000 which are divisible by 13, is (a) 28,405 (b) 24,805 (c) 28,540 (d) None of these Ans:-(a)
24.	If unity is added to the sum of any number of terms of the A.P. 3,5,7,9,.....the resulting sum is (a) 'a' perfect cube (b) a perfect square (c) 'a' number (d) None of these Ans:-(b)

25.	The sum of all natural numbers from 100 to 300 which are exactly divisible by 4 or 5 is (a) 10,200 (b) 15,200 (c) 16,200 (d) None of these Ans:-(c)
26.	The sum of all natural numbers from 100 to 300 which are exactly divisible by 4 and 5 is (a) 2,200 (b) 2,000 (c) 2,220 (d) None of these Ans:-(a)
27.	A person pays Rs. 975 by monthly instalment each less than the former by Rs. 5. The first instalment is Rs. 100. The time by which the entire amount will be paid is (a) 10 months (b) 15 months (c) 14 months (d) none of these Ans:-(b)

28.	A person saved Rs. 16,500 in ten years. In each year after the first year he saved Rs. 100 more than he did in the preceding year. The amount of money he saved in the 1 st year was (a) Rs. 1000 (b) Rs. 1500 (c) Rs. 1200 (d) none of these Ans:-(c)
29.	At 10% C.I. p.a., a sum of money accumulate to Rs. 9625 in 5 years. The sum invested initially is (a) Rs. 5976.37 (b) Rs. 5970 (c) Rs. 5975 (d) Rs. 5370.96 Ans:-(a)
30.	The population of a country was 55 crores in 2005 and is growing at 2% p.a C.I. the population in the year 2015 is estimated as (a) 5705 (b) 6005 (c) 6700 (d) none of these Ans:-(d)

Additional Question bank

1.	If n, h, c are in A.P. as well as in G.P. then — (a) They are also in H.P. (Harmonic Progression) (b) Their reciprocals are in A.P. (c) Both (a) and (b) are true (d) Both (a) and (b) are false Ans:-(c)
2.	If a, b, c be respectively $p^{\text{th}}, q^{\text{th}}$ and r^{th} terms of an A.P. the value of $a(q - r) + b(r - p) + c(p - q)$ is _____ (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)

3.	If the p^{th} term of an A.P. is q and the q^{th} term is p the value of the $(p+q)^{\text{th}}$ term is (a) $p - q - r$ (b) $p + q - r$ (c) $p + q + r$ (d) None Ans:-(b) [SM, MTP April 24]
4.	If the p^{th} term of an A.P. is q and the q^{th} term is p the value of the $(p + q)^{\text{th}}$ term is _____ (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)

5.	The sum of first n natural number is (a) $(n/2)(n+1)$ (b) $(n/6)(n+1)(2n+1)$ (c) $[(n/2)(n+1)]^2$ (d) None Ans:-(a)
6.	The sum of square of first n natural number is (a) $(n/2)(n+1)$ (b) $(n/6)(n+1)(2s+1)$ (c) $[(n/2)(n+1)]^2$ (d) None Ans:-(b)
7.	The sum of cubes of first n natural number is (a) $(n/2)(n+1)$ (b) $(n/6)(n+1)(2s+1)$ (c) $[(n/2)(n+1)]^2$ (d) None Ans:-(c)
8.	The sum of a series in A.P. is 72 the first term is 17 and the common difference -2 . the number of terms is (a) 6 (b) 12 (c) 6 or 12 (d) None Ans:-(c)
9.	Find the sum to n terms of $(1-1/n) + (1-2/n) + (1-3/n) + \dots$ (a) $\frac{1}{2}(n-1)$ (b) $\frac{1}{2}(n+1)$ (c) $(n-1)$ (d) $(n-1)$ Ans:-(a)
10.	If S_n the sum of first n terms in a series is given by $2n^2 + 3n$ the series is in _____. (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(a)
11.	The sum of all natural numbers between 200 and 400 which are divisible by 7 is (a) 7,730 (b) 8,729 (c) 7,729 (d) 8,730 Ans:-(b)

12.	The sum of natural numbers upto 200 excluding those divisible by 5 is (a) 20,100 (b) 4,100 (c) 16,000 (d) None Ans:-(c)
13.	If a, h, c be the sums of p, q, r terms respectively of an A.P. the value of $(a/p)(q-r) + (b/q)(r-p) + (p-q)$ is (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)
14.	If S_1, S_2, S_3 be the respectively the sum of terms of n, 2n, 3n an A.P. the value of $S_3 \div (S_2 - S_1)$ is given by _____. (a) 1 (b) 2 (c) 3 (d) None Ans:-(c)
15.	The sum of n terms of two A.P.s are in the ratio of $(7n-5)/(5n+17)$. Then the term of the two series are equal. (a) 12 (b) 6 (c) 3 (d) None Ans:-(b)
16.	Find three numbers in A.P. whose sum is 6 and the product is -24 (a) $-2, 2, 6$ (b) $-1, 1, 3$ (c) $1, 3, 5$ (d) $1, 4, 7$ Ans:-(a)
17.	Find three numbers in A.P. whose sum is 6 and the sum of whose square is 44. (a) $-2, 2, 6$ (b) $-1, 1, 3$ (c) $1, 3, 5$ (d) $1, 4, 7$ Ans:-(a)

18.	Find three numbers in A.P. whose sum is 6 and the sum of their cubes is 232. (a) $-2, 2, 6$ (b) $-1, 1, 3$ (c) $1, 3, 5$ (d) $1, 4, 7$ Ans:-(a)
19.	Divide 12.50 into five parts in A.P. such that the first part and the last part are in the ratio of 2:3 (a) $2, 2.25, 2.5, 2.75, 3$ (b) $-2, -2.25, -2.5, -2.75, -3$ (c) $4, 4.5, 5, 5.5, 6$ (d) $-4, -4.5, -5, -5.5, -6$ Ans:-(a)
20.	If a, b, c are in A.P. then the value of $(a^3 + 4b^3 + c^3)/[b(a^2 + c^2)]$ is (a) 1 (b) 2 (c) 3 (d) None Ans:-(c)
21.	If a, b, c are in A.P. then the value of $(a^2 + 4ac + c^2)/(ab + bc + ca)$ is (a) 1 (b) 2 (c) 3 (d) None Ans:-(b)
22.	If a, b, c are in A.P. then $(a/bc)(b+c), (b/ca)(c+a), (c/ab)(a+b)$ are in _____ (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(a)
23.	If a, b, c are in A.P. then $a^2(b+c), b^2(c+a), c^2(a+b)$ are in (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(a)
24.	If $(b+c)^{-1}, (c+a)^{-1}, (a+b)^{-1}$ are in A.P. then a^2, b^2, c^2 are in _ (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(a)

25.	If a^2, b^2, c^2 are in A.P. then $(b+c), (c+a), (a+b)$ are in _____ (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(c)
26.	If a^2, b^2, c^2 are in A.P. then $a/(b+c), b/(c+a), c/(a+b)$ are in _____ (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(a)
27.	If $(b+c-a)/a, (c+a-b)/b, (a+b-c)/c$ are in A.P. then a, b, c are in ____ (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(c)
28.	If $(b-c)^2, (c-a)^2, (a-b)^2$ are in A.P. then $(b-c), (c-a), (a-b)$ are in _____ A.P. G.P. H.P. None Ans:-(c)
29.	If a, b, c are in A.P. then $(b+c), (c+a), (a+b)$ are in (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(a)
30.	Find the number which should be added to the sum of any number of terms of the A.P. 3, 5, 7, 9, 11 resulting in a perfect square. (a) -1 (b) 0 (c) 1 (d) None Ans:-(c)
31.	The sum of n terms of an A.P. is $2n^2 + 3n$. Find the n^{th} term. (a) $4n + 1$ (b) $4n - 1$ (c) $2n + 1$ (d) $2n - 1$ Ans:-(a)

32.	The p^{th} term of an A.P. is $1/q$ and the q^{th} term is $1/p$. The sum of the $(pq)^{\text{th}}$ term is _____ (a) $\frac{1}{2}(pq+1)$ (b) $\frac{1}{2}(pq-1)$ (c) $pq+1$ (d) $pq-1$ Ans:-(a)
33.	The sum of p terms of an A.P. is q and the sum of q terms is p . The sum of $p + q$ terms is _____ (a) $(p + q)$ (b) $p + q$ (c) $(p - q)^2$ (d) $p^2 - q^2$ Ans:-(a)
34.	If S_1, S_2, S_3 be the sums of n terms of three A.P.s the first term of each being unity and the respective common differences 1, 2, 3 then $(S_1 + S_3) / S_2$ is (a) 1 (b) 2 (c) -1 (d) None Ans:-(b)
35.	The sum of all natural numbers between 500 and 1000, which are divisible by 13, is _____ (a) 28,400 (b) 28,405 (c) 28,410 (d) None Ans:-(b)
36.	The sum of all natural numbers from 100 and 300, which are divisible by 4, is (a) 10,200 (b) 30,000 (c) 8,200 (d) 2,200 Ans:-(a)
37.	The sum of all natural numbers from 100 to 300 excluding those, which are divisible by 4, is _____ (a) 10,200 (b) 30,000 (c) 8,200 (d) 2,200 Ans:-(b)

38.	The sum of all natural numbers from 100 to 300, which are divisible by 5, is _____ (a) 10,200 (b) 30,000 (c) 8,200 (d) 2,200 Ans:-(c)
39.	The sum of all natural numbers from 100 to 300, which are divisible by 4 and 5, is _____ (a) 10,200 (b) 30,000 (c) 8,200 (d) 2,200 Ans:-(d)
40.	The sum of all natural numbers from 100 to 300, which are divisible by 4 or 5, is (a) 10,200 (b) 8,200 (c) 2,200 (d) 16,200 Ans:-(d)
41.	If the n terms of two A.P.s are in the ratio $(3n+4) : (n+4)$ the ratio of the fourth term is _____ (a) 2 (b) 3 (c) 4 (d) None Ans:-(a)
42.	If a, b, c, d are in A.P. then (a) $a^2 - 3b^2 + 3c^2 - d^2 = 0$ (b) $a^2 + 3b^2 + 3c^2 + d^2 = 0$ (c) $a^2 + 3b^2 + 3c^2 - d^2 = 0$ (d) None Ans:-(a)
43.	If a, b, c, d, e are in A.P. then (a) $a - b - d + e = 0$ (b) $a - 2c + e = 0$ (c) $b - 2c + d = 0$ (d) all the above Ans:-(d)
44.	The three numbers in A.P. whose sum is 18 and product is 192 are _____ (a) 4, 6, 8 (b) -4, -6, -8 (c) 8, 6, 4 (d) both (a) & (c) Ans:-(d)

45.	The three numbers in A.P., whose sum is 27 and the sum of their squares is 341, are _____ (a) 2, 9, 16 (b) 16, 9, 2 (c) both (a) and (b) (d) -2, -9, -16 Ans:-(c)
46.	The four numbers in A.P., whose sum is 24 and their product is 945, are _____ (a) 3, 5, 7, 9 (b) 2, 4, 6, 8 (c) 5, 9, 13, 17 (d) None Ans:-(a)
47.	The four numbers in A.P., whose sum is 20 and the sum of their squares is 120, are (a) 3, 5, 7, 9 (b) 2, 4, 6, 8 (c) 5, 9, 13, 17 (d) None Ans:-(b)
48.	The four numbers in A.P. with the sum of second and third being 22 and the product of the first and fourth being 85 are (a) 3, 5, 7, 9 (b) 2, 4, 6, 8 (c) 5, 9, 13, 17 (d) None Ans:-(c)
49.	The five numbers in A.P. with their sum 25 and the sum of their squares 135 are _____ (a) 3, 4, 5, 6, 7 (b) 3, 3.5, 4, 4.5, 5 (c) -3, -4, -5, -6, -7 (d) -3, -3.5, -4, -4.5, -5 Ans:-(a)
50.	The five numbers in A.P. with the sum 20 and product of the first and last 15 are (a) 3, 4, 5, 6, 7 (b) 3, 3.5, 4, 4.5, 5 (c) -3, -4, -5, -6, -7 (d) -3, -3.5, -4, -4.5, -5 Ans:-(b)
51.	The sum of n terms of 2, 4, 6, 8..... is (a) $n(n+1)$ (b) $(n/2)(n+1)$ (c) $n(n-1)$ (d) $(n/2)(n-1)$ Ans:-(a)

52.	The sum of n terms of $a+b, 2a, 3a-b,$ is (a) $n(a-b)+2b$ (b) $n(a+b)$ (c) both the above (d) None Ans:-(d)
53.	The sum of n terms of $(x+y)^2, (x^2+y^2), (x-y)^2,$ is (a) $(x+y)^2 - 2(n-1)xy$ (b) $n(x+y)^2 - n(n-1)xy$ (c) both the above (d) None Ans:-(b)
54.	The sum of n terms of $(1/n)(n-1), (1/n)(n-2), (1/n)(n-3)$ is (a) 0 (b) $(1/2)(n-1)$ (c) $(1/2)(n+1)$ (d) None Ans:-(b)
55.	The sum of n terms of 1.4, 3.7, 5.10.....Is (a) $(n/2)(4n^2+5n-1)$ (b) $(n/3)(4n^2+5n-1)$ (c) $(n/3)(4n^2+1)$ (d) None Ans:-(a)
56.	The sum of n term of $1^2, 3^2, 5^2, 7^2, \dots$ is (a) $(n/3)(4n^2-1)$ (b) $(n/2)(4n^2-1)$ (c) $n(n/3)(4n^2-1)$ (d) None Ans(a)
57.	The sum of n terms of 1, (1 + 2), (1 + 2 + 3) is (a) $(n/3)(n+1)(n-2)$ (b) $(n/3)(n+1)(u+2)$ (c) $n(u+1)(n+2)$ (d) None Ans:-(d)
58.	The sum of n terms of the series $1^2/1+(1^2+2^2)/2+(1^2+2^2+3^2)/3+\dots$ is (a) $(n/36)(4n^2+15n+17)$ (b) $(n/12)(4n^2+15n+17)$ (c) $(n/12)(4n^2+15n+17)$ (d) None Ans:-(a)

59.	The sum of n terms of the series $2.4.6 + 4.6.8 + 6.8.10 + \dots$ is (a) $2n(n^3+6n^2+11n+6)$ (b) $2n(n^3-6n^2+11n-6)$ (c) $n(n^3+6n^2+11n+6)$ (d) $n(n^3+6n^2+11n-6)$ Ans:-(a)
60.	The sum of n terms of the series $1.3^2+4.4^2+7.5^2+10.6^2+\dots$ is (a) $(n/12)(n+1)(9n^2+49n+44)-8n$ (b) $(n/12)(n+1)(9n^2+49n+44)+8n$ (c) $(n/6)(2s+1)(9n^2+49n+44)-8n$ (d) None Ans:-(a)
61.	The sum of n terms of the series $4 + 6 + 9 + 13 + \dots$ is (a) $(n/6)(n^2+3n+20)$ (b) $(n/6)(n+1)(n+2)$ (c) $(n/3)(n+1)(n+2)$ (d) None Ans:-(a)
62.	The sum to n terms of the series 11, 23, 59, 167..... is (a) $3^{n+1}+5n-3$ (b) $3^{n+1}+5n+3$ (c) 3^n+5n-3 (d) None Ans:-(a)
63.	The sum of n terms of the series $1/(4.9)+1/(9.14)+1/(14.19)+1/(19.24)+\dots$ is (a) $(n/4)(5n+4)^{-1}$ (b) $(n/4)(5n+4)$ (c) $(n/4)(5n-4)^{-1}$ (d) None Ans:-(a)
64.	The sum of n terms of the series $1 + 3 + 5 + \dots$ is (a) n^2 (b) $2n^2$ (c) $n^2/2$ (d) None Ans:-(a)
65.	The sum of n terms of the series $2 + 6 + 10 + \dots$ is (a) $2n^2$ (b) n^2 (c) $n^2/2$ (d) $4n^2$ Ans:-(a)

66.	The sum of n terms of the series $1.2 + 2.3 + 3.4 + \dots$ is (a) $(n/3)(n+1)(n+2)$ (b) $(n/2)(n+1)(n+2)$ (c) $(n/3)(n+1)(n-2)$ (d) None Ans:-(a)
67.	The sum of n terms of the series $1.2.3 + 2.3.4 + 3.4.5 + \dots$ is (a) $(n/4)(n+1)(n+2)(n+3)$ (b) $(n/3)(n+1)(n+2)(n+3)$ (c) $(n/2)(n+1)(n+2)(n+3)$ (d) None Ans:-(a)
68.	The sum of n terms of the series $1.2+3.2^2+5.2^3+7.2^4+\dots$ is (a) $(n-1)2^{n+2} - 2^{n+1} + 6$ (b) $(n+1)2^{n+2} - 2 + 6$ (c) $(n-1)2^{n+2} - 2^{n+1} - 6$ (d) None Ans:-(d)
69.	The sum of n terms of the series $1/(3.8)+1/(8.13)+1/(13.18)+\dots$ is (a) $(n/3)(5n+3)^{-1}$ (b) $(n/2)(5n+3)^{-1}$ (c) $(n/2)(5n-3)^{-1}$ (d) None Ans:-(a)
70.	The sum of n terms of the series $1/1+1/(1+2)+1/(1+2+3)+\dots$ is (a) $2s(n+1)^{-1}$ (b) $n(n+1)$ (c) $2n(n-1)^{-1}$ (d) None Ans:-(a)
71.	The sum of n terms of the series $2^2+5^2+8^2+\dots$ is (a) $(n/2)(6n^2+3n-1)$ (b) $(n/2)(6n^2-3n-1)$ (c) $(n/2)(6n^2+3n+1)$ (d) None Ans:-(a)
72.	The sum of n terms of the series $1^2 + 3^2 + 5^2 + \dots$ is (a) $n/3(4n^2 - 1)$ (b) $n^2(2n^2+1)$ (c) $n(2n-1)$ (d) $n(2n+1)$ Ans:-(a)

73.	The sum of n terms of the series $1.4 + 3.7 + 5.10 + \dots$ is (a) $n/3(4n^2 + 5n + 5)$ (b) $(n/2)(5n^2 + 4n - 1)$ (c) $(n/2)(4n^2 + 5n + 1)$ (d) None Ans:-(a)
74.	The sum of n terms of the series $2.3^2 + 5.4^2 + 8.5^2 + \dots$ is (a) $(n/12)(9n^3 + 62n^2 + 123n + 22)$ (b) $(n/12)(9n^3 - 62n^2 + 123n + 22)$ (c) $(n/6)(9n^3 + 62n^2 + 123n + 22)$ (d) None Ans:-(a)
75.	The sum of n terms of the series $1 + (1 + 3) + (1 + 3 + 5) + \dots$ is (a) $(n/6)(n+1)(2n+1)$ (b) $(n/6)(n+1)(n+2)$ (c) $(n/3)(n+1)(2n+1)$ (d) None Ans:-(a)
76.	The sum of n terms of the series $1^2 + (1^2 + 2^2) + (1^2 + 2^2 + 3^2) + \dots$ is (a) $(n/12)(n+1)2(n+2)$ (b) $(n/12)(n-1)2(n+2)$ (c) $(n/12)(n+1)(n+2)$ (d) None Ans:-(a)
77.	The sum of n terms of the series $1 + (1 + 1/3) + (1 + 1/3 + 1/3^2) + \dots$ is (a) $(3/2)(11^n)$ (b) $(3/2)[1 - (1/2)^n]$ (c) Both (d) None Ans:-(b)
78.	The sum of n terms of the series $n.1 + (n-1).2 + (n-2).3 + \dots$ is (a) $(n/6)(n+1)(n+2)$ (b) $(n/3)(n+1)(n+2)$ (c) $(n/2)(n+1)(n+2)$ (d) None Ans:-(a)
79.	The sum of n terms of the series $1 + 5 + 12 + 22 + \dots$ is (a) $(n^2/2)(n+1)$ (b) $n^2(n+1)$ (c) $(n^2/2)(n-1)$ (d) None Ans:-(a)

80.	The sum of n terms of the series $4 + 14 + 30 + 52 + 80 + \dots$ is (a) $n(n+1)^2$ (b) $n(n-1)^2$ (c) $n(n^2 - 1)$ (d) None Ans:-(a)
81.	The sum of n terms of the series $3 + 6 + 11 + 20 + 37 + \dots$ is (a) $2^{n+1} + (n/2)(n+1) - 2$ (b) $2^{n+1} + (n/2)(n+1) - 1$ (c) $2^{n+1} + (n/2)(n-1) - 2$ (d) None Ans:-(a)
82.	The n^{th} terms of the series is $1/(4.7) + 1/(7.10) + 1/(10.13) + \dots$ is (a) $(1/3)[(3n+1)^{-1} - (3n+4)^{-1}]$ (b) $(1/3)[(3n-1)^{-1} - (3n+4)^{-1}]$ (c) $(1/3)[(3n+1)^{-1} - (3n-4)^{-1}]$ (d) None Ans:-(a)
83.	In question No.(82) the sum of the series upto n is (a) $(n/4)(3n+4)^{-1}$ (b) $(n/4)(3n-4)^{-1}$ (c) $(n/2)(3n+4)^{-1}$ (d) None Ans:-(a)
84.	The sum of n terms of the series $1^2/1 + (1^2 + 2^2)/(1+2) + (1^2 + 2^2 + 3^2)/(1+2+3) + \dots$ is (a) $(n/3)(n+2)$ (b) $(n/3)(n+1)$ (c) $(n/3)(n+3)$ (d) None Ans:-(a)
85.	The sum of n terms of the series $13/1 + (13+23)/2 + (13+2^2+33)/3 + \dots$ is (a) $(n/48)(n+1)(n+2)(3n+5)$ (b) $(n/24)(n+1)(n+2)(3n+5)$ (c) $(n/48)(n+1)(n+2)(5n+3)$ (d) None Ans:-(a)
86.	The value of $n^2 + 2n[1+2+3+\dots+(n-1)]$ is (a) N^3 (b) n^2 (c) n (d) None Ans:-(a)

87.	$2^{4n} - 1$ is divisible by (a) 15 (b) 4 (c) 6 (d) 64 Ans:-(a)
88.	$3^n - 2n - 1$ is divisible by (a) 15 (b) 4 (c) 6 (d) 64 Ans:-(b)
89.	$n(n-1)(2n-1)$ is divisible by (a) 15 (b) 4 (c) 6 (d) 64 Ans:-(c)
90.	$72n + 16n - 1$ is divisible by (a) 15 (b) 4 (c) 6 (d) 64 Ans:-(d)
91.	The sum of n terms of the series whose n^{th} term $3n^2 + 2n$ is given by (a) $(n/2)(n+1)(2n+3)$ (b) $(n/2)(n+1)(3n+2)$ (c) $(n/2)(n+1)(3n-2)$ (d) $(n/2)(n+1)(2n-3)$ Ans:-(a)
92.	The sum of n^{th} terms of the series whose n^{th} term $n \cdot 2^n$ is given by (a) $(n-1)2^{n+1} + 2$ (b) $(n+1)2^{n+1} + 2$ (c) $(n-1)2^n + 2$ (d) None Ans:-(a)
93.	The sum of n^{th} terms of the series whose n^{th} term $5 \cdot 3^{n+1} + 2n$ is given by (a) $(5/2)(3^{n+2} - 9) + n(n+1)$ (b) $(2/5)(3^{n+2} - 9) + n(n+1)$ (c) $(5/2)(3^{n+2} + 9) + n(n+1)$ (d) None Ans:-(a)

94.	If the third term of a G.P. is the square of the first and the fifth term is 64 the series would be ____ (a) $4 + 8 + 16 + 32 + \dots$ (b) $4 - 8 + 16 - 32 + \dots$ (c) Both (d) None Ans:-(c)
95.	Three numbers whose sum is 15 are in A.P. but if they are added by 1, 4, 19 respectively they are in G.P. The numbers are (a) 2, 5, 8 (b) 26, 5, -16 (c) Both (d) None Ans:-(c)
96.	If a, b, c are the $p^{\text{th}}, q^{\text{th}}$ and r^{th} terms of a G.P. respectively the value of $a^{q-r} \cdot b^{r-p} \cdot c^{p-q}$ is..... (a) 0 (b) 1 (c) -1 (d) None Ans:-(b)
97.	If a, b, c are in A.P. and x, y, z in G.P. then the value of $x^b \cdot c^y \cdot z^x \cdot b^z$ is ____ (a) 0 (b) 1 (c) -1 (d) None Ans:-(b)
98.	If a, b, c are in A.P. and x, y, z in G.P. then the value of $(x^b \cdot y^c \cdot z^a) - (x^c \cdot y^a \cdot z^b)$ is ____ (a) 0 (b) 1 (c) -1 (d) None Ans:-(b)
99.	The sum of n terms of the series $7 + 77 + 777 + \dots$ is (a) $(7/9)[(1/9)(10^{n+1} - 10) - n]$ (b) $(9/10)[(1/9)(10^{n+1} - 10) - n]$ (c) $(10/9)[(1/9)(10^{n+1} - 10) - n]$ (d) None Ans:-(a)

[SM, MTP June 23]

100.	The least value of n for sum of n terms of the series $1 + 3 + 32 + \dots$ is greater than 7000 is _____ . (a) 9 (b) 10 (c) 8 (d) 7 Ans:-(a)
101.	If 'S' be the sum, 'P' the product and 'N' the sum of the reciprocals of n terms in a G.P. then 'P' is the _____ of S^n and R^n . (a) Arithmetic Mean (b) Geometric Mean (c) Harmonic Mean (d) None Ans:-(b)
102.	Sum upto ∞ of the series $8 + 4\sqrt{2} + 4 + \dots$ is (a) $8(2 + \sqrt{2})$ (b) $8(2 - \sqrt{2})$ (c) $4(2 + \sqrt{2})$ (d) $4(2 - \sqrt{2})$ Ans:-(a)
103.	Sum upto of the series $1/2 + 1/3^2 + 1/2^3 + 1/3^4 + 1/2^5 + 1/3^6 + \dots$, is (a) $19/24$ (b) $24/19$ (c) $5/24$ (d) None Ans:-(a) [SM, MTP May 22]
104.	If $1 + a + a^2 + \dots = x$ and $1 + b + b^2 + \dots = y$ then $1 + ab + a^2b^2 + \dots$ is given by _____ (a) $(xy)/(x+y-1)$ (b) $(xy)/(x-y-1)$ (c) $(xy)/(x+y+1)$ (d) None Ans:-(a)
105.	If the sum of three numbers in G.P. is 35 and their product is 1000 the numbers are (a) 20, 10, 5 (b) 5, 10, 20 (c) both (d) None Ans:-(c)

106.	If the sum of three numbers in G.P. is 21 and the sum of their squares is 189 the numbers are (a) 3, 6, 12 (b) 12, 6, 3 (c) Both (d) None Ans:-(c)
107.	If a, f, c are in G.P. then the value of $a(b^2 + c^2) - c(a^2 + b^2)$ is (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)
108.	If a, b, c, d are in G.P. then the value of $b(ab - cd) - (c+a)(b^2 - c^2)$ is _____ (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)
109.	If a, b, c, d are in G.P. then the value of $(ab + bc + cd)2 - (a^2 + b^2 + c^2)(b^2 + c^2 + d^2)$ is _____ (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)
110.	If a, b, c, d are in G.P. then $a+b, b+c, C+d$ are in (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(b)
111.	If a, b, c are in G.P. then $a^2 + b^2, ab + bc, b^2 + c^2$ are in (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(b)
112.	If a, b, x, y, z are positive numbers such that a, x, b are in A.P. and a, y, b are in G.P. and $z = (2ab)/(a+b)$ then (a) x, y, z are in G.P. (b) $x \geq y \geq z$ (c) both (d) None Ans:-(c)

113.	If a, b, c are in G.P. then the value of $(a-b+c)(a+b+c)^2 - (a+b+c)(a^2+b^2+c^2)$ is given by (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)
114.	If a, b, c are in G.P. then the value of $a(b^2+c^2) - c(a^2+b^2)$ is given by (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)
115.	If a, b, c are in G.P. then the value of $a^2b^2c^2(a^{-3}+b^{-3}+c^{-3}) - (a^3+b^3+c^3)$ is given by (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)
116.	If a, b, c, d are in G.P. then $(a-b)^2, (b-c)^2, (c-d)^2$ are in (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(b)
117.	If a, b, c, d are in G.P. then the value of $(b-c)^2 + (c-a)^2 + (d-b)^2 - (a-d)^2$ is given by (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)
118.	If $(a-b), (b-c), (c-a)$ are in G.P. then the value of $(a+b+c)^2 - 3(ab+bc+ca)$ is given by (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)
119.	If $a^{1/x} = b^{1/y} = c^{1/z}$ and a, b, c are in G.P. then x, y, z are in (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(a)

[SM, MTP May 21]

120.	If $x = a + a/r + a/r^2 + \dots \infty$, $y = b - b/r + b/r^2 - \dots \infty$, and $z = c + c/r^2 + c/r^4 + \dots \infty$, then the value of $\frac{xy}{z} - \frac{ab}{c}$ is (a) 0 (b) 1 (c) -1 (d) None Ans:-(a)
121.	If a, b, c are in A.P. a, x, b are in G.P. and b, y, c are in G.P. then x^2, b^2, y^2 are in (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(a)
122.	If $a, b-a, c-a$ are in G.P. and $a=b/3=c/5$ then a, b, c are in A.P. G.P. H.P. None Ans:-(a)
123.	If $a, b, (c+1)$ are in G.P. and $a = (b-c)^2$ then a, b, c are in (a) A.P. (b) G.P. (c) H.P. (d) None Ans:-(a)
124.	If $S_1, S_2, S_3, \dots, S_n$ are the sums of infinite G.P.s whose first terms are $1, 2, 3, \dots, n$ and whose common ratios are $1/2, 1/3, \dots, 1/(n+1)$ then the value of $S_1 + S_2 + S_3 + \dots + S_n$ is (a) $(n/2)(n+3)$ (b) $(n/2)(n+2)$ (c) $(n/2)(n+1)$ (d) $n^2/2$ Ans:-(a)
125.	The G.P. whose 3 rd and 6 th terms are $1, -1/8$ respectively is (a) $4, -2, 1, \dots$ (b) $4, 2, 1, \dots$ (c) $4, -1, 1/4, \dots$ (d) None Ans:-(a)

126.	In a G.P. if the $(p+q)^{\text{th}}$ term is m and the $(p-q)^{\text{th}}$ term is n then the p^{th} term is _____ (a) $(mn)^{1/2}$ (b) mn (c) $(m+n)$ (d) $(m-n)$ Ans:-(a)
127.	The sum of n terms of the series is $1/\sqrt{3+1+3/\sqrt{3}+\dots}$ (a) $(1/6)(3+\sqrt{3})(3^{n/2}-1)$ (b) $(1/6)(\sqrt{3}+1)(3^{n/2}-1)$ (c) $(1/6)(3+\sqrt{3})(3^{n/2}+1)$ (d) None Ans:-(a)
128.	The sum of n terms of the series $5/2 - 1 + 2/5 - \dots$ is (a) $(1/14)(5^{n+2^n})/5^{n-2}$ (b) $1/14)(5^n - 2^n)/5^{n-2}$ (c) Both (d) None Ans:-(c)
129.	The sum of n terms of the series $0.3 + 0.03 + 0.003 + \dots$ is (a) $(1/3)(1-1/10^n)$ (b) $(1/3)(1+1/10^n)$ (c) Both (d) None Ans:-(a)
130.	The sum of first eight terms of G.P. is five times the sum of the first four terms. The common ratio is (a) $\sqrt{2}$ (b) $-\sqrt{2}$ (c) Both (d) None Ans:-(c) [SM, MTP May 24]
131.	The sum of first eight terms of geometric progression is five times the sum of the first four terms. The common ratio is (a) $\sqrt{3}$ (b) $\sqrt{2}$ (c) 4 (d) 2 Ans: (b) [MTP Nov 22]

132.	If the sum of n terms of a G.P. with first term 1 and common ratio $1/2$ is $1+127/128$, the value of n is (a) 8 (b) 5 (c) 3 (d) None Ans:-(a)
133.	If the sum of n terms of a G.P. with last term 128 and common ratio 2 is 255, the value of n is _____ 8 5 3 None Ans:-(a)
134.	How many terms of the G.P. 1, 4, 16, ... are to be taken to have their sum 341? (a) 8 (b) 5 (c) 3 (d) None Ans:-(b)
135.	The sum of n terms of the series $5 + 55 + 555 + \dots$ is (a) $(50/81)(10^n-1)-(5/9)n$ (b) $(50/81)(10^n+1)-(5/9)n$ (c) $(50/81)(10^n+1)+(5/9)n$ (d) None Ans:-(a)
136.	The sum of n terms of the series $0.5 + 0.55 + 0.555 + \dots$ is (a) $(5/9)n-(5/81)(1-10^{-n})$ (b) $(5/9)n+(5/9)(1-10^{-n})$ (c) $(5/9)n+(5/81)(1+10^{-n})$ (d) None Ans:-(a) [SM, MTP Dec 24, May 21]
137.	The sum of n terms of the series $1.03+1.03^2+1.03^3+\dots$ is (a) $(103/3)(1.03^n-1)$ (b) $(103/3)(1.03^n+1)$ (c) $(103/3)(1.03^n-1)$ (d) None Ans:-(a)

138.	The sum upto infinity of the series $\frac{1}{2} + \frac{1}{6} + \frac{1}{18} + \dots$ is (a) $\frac{3}{4}$ (b) $\frac{1}{4}$ (c) $\frac{1}{2}$ (d) None Ans:-(a) [SM, MTP June 23]
139.	The sum upto infinity of the series $4 + 0.8 + 0.16 + \dots$ is (a) 5 (b) 10 (c) 8 (d) None Ans:-(a)
140.	The sum upto infinity of the series $\sqrt{2} + \frac{1}{\sqrt{2}} + \frac{1}{2} + \dots$ is (a) $2\sqrt{2}$ (b) 2 (c) 4 (d) None Ans:-(a)
141.	The sum upto infinity of the series $\frac{2}{3} + \frac{5}{9} + \frac{2}{27} + \frac{5}{81} + \dots$ is (a) $\frac{11}{8}$ (b) $\frac{8}{11}$ (c) $\frac{3}{11}$ (d) None Ans:-(a)
142.	The sum upto infinity of the series $(\sqrt{2}+1) + 1 + (\sqrt{2}-1) + \dots$ is (a) $(\frac{1}{2})(4+32)$ (b) $(\frac{1}{2})(4-32)$ (c) $4+32$ (d) None Ans:-(a)
143.	The sum upto infinity of the series $(1+2^{-2}) + (2^{-1}+2^{-4}) + (2^{-2}+2^{-6}) + \dots$ is (a) $\frac{7}{3}$ (b) $\frac{3}{7}$ (c) $\frac{4}{7}$ (d) None Ans:-(a)
144.	The sum upto infinity of the series $\frac{4}{7} - \frac{5}{72} + \frac{4}{7} - \frac{5}{74} + \dots$ is (a) $\frac{23}{48}$ (b) $\frac{25}{48}$ (c) $\frac{1}{2}$ (d) None Ans:-(a)

145.	If the sum of infinite terms in a G.P. is 2 and the sum of their squares is $\frac{4}{3}$ the series is (a) 1, $\frac{1}{2}$, $\frac{1}{4}$ (b) 1, $-\frac{1}{2}$, $\frac{1}{4}$ (c) -1, $-\frac{1}{2}$, $-\frac{1}{4}$ (d) None Ans:-(a)
146.	The infinite G.P. with first term $\frac{1}{4}$ and sum $\frac{1}{3}$ is (a) $\frac{1}{4}$, $\frac{1}{16}$, $\frac{1}{64}$... (b) $\frac{1}{4}$, $-\frac{1}{16}$, $\frac{1}{64}$... (c) $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$... (d) None Ans:-(a)
147.	If the first term of a G.P. exceeds the second term by 2 and the sum to infinity is 50 the series is _____ (a) 10, 8, $\frac{32}{5}$... (b) 10, 8, $\frac{5}{2}$... (c) 10, $\frac{10}{3}$, $\frac{10}{9}$... (d) None Ans:-(a)
148.	Three numbers in G.P. with their sum 130 and their product 27,000 are (a) 10, 30, 90 ... (b) 90, 30, 10 ... (c) both (d) None Ans:-(c)
149.	Three numbers in G.P. with their sum $\frac{13}{3}$ and sum of their squares $\frac{91}{9}$ are (a) $\frac{1}{3}$, 1, 3 (b) 3, 1, $\frac{1}{3}$ (c) both (d) None Ans:-(c)
150.	Find five numbers in G.P. such that their product is 32 and the product of the last two is 108. (a) $\frac{2}{9}$, $\frac{2}{3}$, 2, 6, 18 (b) 18, 6, 2, $\frac{2}{3}$, $\frac{2}{9}$ (c) both (d) None Ans:-(a)

151.	If the continued product of three numbers in G.P. is 27 and the sum of their products in pairs is 39 the numbers are (a) 1, 3, 9 (b) 9, 3, 1 (c) both (d) None Ans:-(c)

152.	The numbers $x, 8, y$ are in G.P. and the numbers $x, y, -8$ are in A.P. The values of x, y are _____ (a) 16, 4 (b) 4, 16 (c) Both (d) None Ans:-(a)

MTP AND RTP

1.	If 8 th term of an AP is 15, the Sum of the 15 its term is (a) 15 (b) 0 (c) 225 (d) 225/2 Ans : (c) [MTP May 18, June 24]
2.	For what values of x , the number $-\frac{2}{7}, x, -\frac{7}{2}$ Are in g.p.? (a) ± 1 (b) ± 3 (c) ± 2 (d) none of these Ans : (a) [MTP May 18, June 24]
3.	For what value of x ; the sequence $x+1, 3x, 4x+2$ are in AP? (a) 3 (b) 2 (c) 4 (d) 5 Ans : (a) [MTP May 18, June 24, Dec 24, May 24]
4.	If $a^{1/x} = b^{1/y} = c^{1/z}$ and a, b, c are in GP then x, y, z are in (a) AP (b) GP (c) HP (d) AGP Ans : (a) [MTP May 18, June 24]
5.	If 6 th and 13 th term of an A.P are 15 and 36

	respectively the A.P is (a) 2, 5, 8, 11 (b) 1, 4, 6, 8 (c) -4, -1, 2, 5 (d) 0, 3, 6, 9 Ans : (d) [MTP Nov 18]
6.	If the arithmetic mean between two numbers is 64 and the Geometric Mean between them is 16 . The Harmonic mean between them is ____ (a) 64 (b) 4 (c) 16 (d) 40 Ans : (b) [MTP May 18, June 24]
7.	If Arithmetic mean between two numbers is 5 and Geometric mean is 4 then what is the value of Harmonic mean? (a) 3.2 (b) 3.4 (c) 3.5 (d) 3.6 Ans : A [MTP June 23]
8.	The 4 th term of an A.P. is three times the first and the 7 th term exceeds twice the third term by 1. Find the first term 'a' and common difference 'd'. (a) $a = 3, d = 2$ (b) $a = 4, d = 3$ (c) $a = 5, d = 4$ (d) $a = 6, d = 5$ Ans : A [MTP June 23, Dec 24]

9.	34. The sum of the first two terms of an infinite geometric series is 15 and each term is equal to the sum of all the terms following it; then the sum of the series is (a) 20 (b) 15 (c) 25 (d) none of these Ans : (a) [MTP Nov 20]
10.	The sum of n terms of an A.P. is $3n^2+n$; then its pth term is (a) $6P+2$ (b) $6P-2$ (c) $6P-1$ (d) None of these Ans: (c) [MTP Nov 19]
11.	The first term of an A.P. is 100 and the sum of whose first 6 term s is 5 times the sum of the next 6 terms, then the c.d. is - (a) -10 (b) 10 (c) 5 (d) none of these Ans: (a) [MTP Nov 19]
12.	if three AM's between 3 and 11, they are (a) 4, 6, 8 (b) 3, 5, 7 (c) 5, 7, 9 (d) $11/2, 15/2, 19/2$ Ans: (c) [MTP Nov 19]
13.	The sum of progression (a+b), a, (a-b).....n term is (a) $n/2 [2a+(n-1)b]$ (b) $n/2 [2a+(3-n)b]$ (c) $n/2 [2a+(3-n)]$ (d) $n/2 [2a+(n-1)]$ Ans : (b) [MTP Nov 21]
14.	The series $1+10^{-1}+10^{-2}+10^{-3} \dots$ to ∞ is (a) $9/10$ (b) $1/10$ (c) $10/9$ (d) none of these Ans : (c)

	[MTP Nov 21]
15.	Find the sum of first twenty-five terms of A.P. series whose n^{th} term is $(n/5+2)$. (a) 105 (b) 115 (c) 125 (d) 135 Ans : (b) [MTP Nov 21]
16.	The value of K, for which the terms $7K+3, 4K-5, 2K+10$ are in A.P., is (a) 13 (b) -23 (c) 13 (d) 23 Ans. (b) [MTP May 19]
17.	Find the three numbers in G.P, whose sum is 19 and product is 216. (a) 9, 6, 4 or 4, 6, 9 (b) 9, 6, 3 or 3, 6, 9 (c) 9, 3, 1 or 1, 3, 9 (d) 9, 3, -1 or -1, 3, 9 Ans. (a) [MTP May 19]
18.	Which term of the AP 64, 60, 56, 52....is Zero (a) 16 (b) 17 (c) 15 (d) 14 Ans : (b) [MTP May 19]
19.	The two-arithmetic means between 4 and 13 are (a) 7, 10 (b) 3, 14 (c) 5, 12 (d) 6, 11 Ans : (a) [MTP Nov 18]
20.	The Sum of First n terms of an A.P is $5n^2+7n$. The 10^{th} term is (a) 101 (b) 96 (c) 84 (d) 102 Ans : (d) [MTP Nov 18]
21.	In a G.P. If the third term of a GP is $2/3$ and 6th term is $2/81$, then the first term is

	(a) 6 (b) $\frac{1}{3}$ (c) 9 (d) 2 Ans : (a) [MTP May 22, Nov 23, July 24]
22.	In a GP .if fourth term is 3 then the product of first seven terms is (a) 3^5 (b) 3^7 (c) 3^6 (d) 3^8 Ans : (b) [MTP May 22]
23.	If x, y and z are the terms in G.P , then the term x^2+y^2 , $xy + yz$, y^2+z^2 are in (a) AP (b) GP (c) HP (d) none of the above Ans : (b) [MTP May 22]
24.	If the common difference of an AP equals to the first term, then the ratio of its mth term and nth term is: (a) n:m (b) m: n (c) $m^2:n^2$ (d) None of these Ans : (b) [MTP May 22]
25.	Find the value of $1 + 2 + 3 + \dots + 105$ (a) 5000 (b) 5560 (c) 5565 (d) None of these Ans : 3 [MTP May 22]
26.	In a G. P sixth term is 729 and the common ratio is 3, then the first term of G.P is (a) 2 (b) 3 (c) 4 (d) 7 Ans : (b) [MTP May 22]
27.	A batsman in his 20 th innings makes a score of 120 and thereby increases his average by 5. What is his average after 20 th innings ? (a) 60

	(b) 50 (c) 65 (d) 70 Ans : 3 [MTP May 22]
28.	In AP, $T_p = q$ and $T_q = P$ then $T_{p+q} = \dots\dots\dots$ (a) 0 (b) $-(p + q)$ (c) $(p+q)/2$ (d) 1 Ans : A [MTP April 23]
29.	The 5th and 8th terms of a GP series is 27 and 729. Then find the 10th term. (a) 729 (b) 243 (c) 81683 (d) 6561 Ans : D [MTP April 23]
30.	If the 17 and 19 sum of n terms of an A.P be $2n^2 + 5n$, then its 'n' term is: (a) $4n - 2$ (b) $3n - 4$ (c) $4n + 3$ (d) $3n + 4$ Ans : (c) [MTP April 24]
31.	The first, second and seventh term of an AP. are in G.P. and the common difference is 2, the 2nd term of A.P. is : (a) $\frac{5}{2}$ (b) 2 (c) $\frac{3}{2}$ (d) $\frac{1}{2}$ Ans : (a) [MTP April 24]
32.	If the sum of n terms of an A.P. is $(3n^2 - n)$ and its common difference is 6, then its third term is: (a) 10 (b) 12 (c) 14 (d) 16 Ans : (c) [MTP May 21]
33.	If the sum of n terms of an AP is $(3n^2 - n)$ and its common difference is 6, then its first term is (a) 3 (b) 2

	(c) 4 (d) 1 Ans : (b) [MTP Nov 22, Nov 23, July 24]
34.	Insert 4 A.M.'s between 3 and 18: (a) 12,15,9,6 (b) 6,9,12,15 (c) 9,6,12,15 (d) 15,12,9,6 Ans : (b) [MTP May 21, Dec 23]
35.	Find the numbers whose GM is 5 and AM is 7.5: (a) 12 and 13 (b) 13.09 and 1.91 (c) 14 and 11 (d) 17 and 19 Ans : (b) [MTP April 24]
36.	Find the sum of all natural numbers between 250 and 1,000 which are exactly divisible by 3 : (a) 1,56,375 (b) 1,56,357 (c) 1,65,375 (d) 1,65,357 Ans : (a) [MTP April 24]
37.	If p^{th} term of a GP is x and the q^{th} term is y , then find the n^{th} term: (a) $\left[\frac{x^{(n-q)}}{y^{(n-p)}}\right]$ (b) $\left[\frac{x^{(n-q)}}{y^{(n-p)}}\right]^{(p-q)}$ (c) 1 (d) $\left[\frac{x^{(n-q)}}{y^{(n-p)}}\right]^{\frac{1}{p-q}}$ Ans: (d) [MTP May 21]
38.	If 20 A.M.s. are inserted between 3 and 51 then sum of these 20 A.M.s is (a) 540 (b) 1080 (c) 270 (d) None of these Answer (a) [MTP June 23]
39.	If the sum of 'terms of an Arithmetic Progression is $2n^2$, the fifth term is (a) 20 (b) 50 (c) 18 (d) 25

	Ans : (c) [MTP Nov 21, RTP Jan 25]
40.	The ratio of sum of first n natural numbers to that of sum of cubes of first n natural numbers is (a) 3:16 (b) $n(n+1) / 2$ (c) $2 / n(n+1)$ (d) None of the above Ans : (c) [MTP Nov 21]
41.	The sum of the first 3 terms in an AP is 18 and that of the last 3 is 28. If the AP has 13 terms, what is the sum of the middle three terms? (a) 23 (b) 18 (c) 19 (d) None of the above Ans : (a) [MTP Nov 21]
42.	In a geometric progression, the second term is 12 and sixth term is 192. Find 11th term. (a) 3,072 (b) 1,536 (c) 12,288 (d) 6,144 Ans : (d) [MTP Nov 22]
43.	The first and last terms of an arithmetic progression are 5 and 905. Sum of the terms is 45,955. The number of terms is (a) 99 (b) 100 (c) 101 (d) 102 Ans : (c) [MTP Nov 22]
44.	If 5th term of G.P. is 32 and 3rd term of G.P. is 8 then 6th term of G.P. is (a) 4 (b) 16 (c) 32 (d) 6 Ans : (d) [MTP Nov 22]
45.	Sum of x terms of two AP's are in the ratio $(3x + 5) : (5x + 3)$ then ratio of their 10th term is (a) 31 : 49

	(b) 30 : 49 (c) 28 : 49 (c) None of these Ans : (a) [MTP Nov 22]
46.	${}^nP_3 : {}^nP_2 = 2 : 1$ (a) 4 (b) $7/2$ (c) 5 (d) $2/7$ Ans : (a) [MTP Nov 22]
47.	Sum lying from 100 to 300 which is divisible by 4 and 5 is (a) 2000 (b) 2100 (c) 2200 (d) 2300 Ans : (c) [MTP Nov 22]
48.	Divide 144 into three parts which are in AP and such that the largest is twice the smallest, the smallest of three numbers will be: (a) 48 (b) 36 (c) 13 (d) 32 Ans : (d) [MTP May 24]
49.	Find the sum of the series. $243 + 324 + 432 + \dots$ to n terms (a) $3^6 \left(\frac{4^n}{3^n}, -1 \right)$ (b) $3^4 \left(\frac{4^n}{3^n}, -1 \right)$ (c) $3^6 \left(\frac{3^n}{4^n}, -1 \right)$

	(d) None of these Ans : (a) [MTP May 24]
50.	The value of N in $1/7! + 1/8! = N/9!$ is (a) 81 (b) 78 (c) 89 (d) 64 Ans : A [MTP Nov 23]
51.	Find the product of: $(243), (243)^{1/6}, (243)^{1/36}, \dots, \infty$ (a) 1,024 (b) 27 (c) 729 (d) 243 Ans : C [MTP Dec 23]
52.	Find the sum to infinity of the following series: $1 - 1 + 1 - 1 + 1 - 1 + \dots, \infty$ (a) 1 (b) ∞ (c) $1/2$ (d) Does not exist Ans : C [MTP Dec 23]
53.	The sum of the series $1 + 11 + 111 + \dots$ to n terms is . (a) $1/27 (10^{n+1} - 9n - 10)$ (b) $10^{n+1} - 9n - 10$ (c) $1/81 (10^{n+1} - 9n - 10)$ (d) None of these Ans : C [MTP Dec 23]
54.	

CHAPTER 7: SETS, RELATIONS AND FUNCTIONS

Exercise 7 (A)

1.	The number of subsets of the set $\{2, 3, 5\}$ is (a) 3 (b) 8 (c) 6 (d) none of these Ans-(b)	7.	From Q.7 To The data to be used If $P=\{1,2,3,5,7\}, Q=\{1,3,6,10,15\}$, Universal Set $S=\{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15\}$ The cardinal number of $P \cap Q$ is (a) 3 (b) 2 (c) 0 (d) none of these Ans-(b)
2.	The number of subsets of a set containing n elements is (a) 2^n (b) 2^{-n} (c) n (d) none of these Ans-(a)	8.	The cardinal number of $P \cup Q$ is (a) 10 (b) 9 (c) 8 (d) none of these Ans-(c)
3.	The null set is represented by (a) $\{\Phi\}$ (b) (0) (c) Φ (d) none of these Ans-(c)	9.	$n(P')$ is (a) 10 (b) 5 (c) 6 (d) none of these Ans-(a)
4.	$A = [2, 3, 5, 7]$, $B = \{4, 6, 8, 10\}$ then $A \cap B$ can be written as (a) $\{ \}$ (b) (Φ) (c) $(A \cup B)'$ (d) None of these Ans-(a)	10.	$n(Q')$ is (a) 4 (b) 10 (c) 4 (d) none of these Ans-(b)
5.	The set $\{x \mid 0 < x < 5\}$ represents the set when x may take integral values only (a) $\{0, 1, 2, 3, 4, 5\}$ (b) $\{1, 2, 3, 4\}$ (c) $\{1, 2, 3, 4, 5\}$ (d) none of these Ans-(b)	11.	The set of cubes of the natural number is (a) a finite set (b) an infinite set (c) a null set (d) none of these Ans-(b)
6.	The set $(0, 2, 4, 6, 8, 10)$ can be written as (a) $\{2x \mid 0 < x < 5\}$ (b) $\{x: 0 < x < 5\}$ (c) $\{2x: 0 \leq x \leq 5\}$ (d) none of these Ans-(c)	12.	The set $\{2^x \mid x \text{ is any positive rational number}\}$ is (a) an infinite set (b) a null set (c) a finite set

	(d) none of these Ans-(a)
13.	$(1 - (-1)^x)$ for all integer x is the set (a) $\{0\}$ (b) $\{2\}$ (c) $\{0, 2\}$ (d) none of these Ans-(c)
14.	E is a set of positive even numbers and O is a set of positive odd numbers, then $E \cup O$ is (a) set of whole numbers (b) N (c) a set of rational number (d) none of these Ans-(b)
15.	If R is the set of positive rational numbers and E is the set of real numbers then (a) $R \subseteq E$ (b) $R \subset E$ (c) $E \subset R$ (d) none of these Ans-(b)
16.	If N is the set of natural numbers and I is the set of positive integers, then (a) $N = I$ (b) $N \subset I$ (c) $N \subseteq I$ (d) none of these Ans-(a)
17.	If I is the set of isosceles triangles and E is the set of equilateral triangles, then (a) $I \subset E$ (b) $E \subset I$ (c) $E = I$ (d) none of these Ans-(b)
18.	If R is the set of isosceles right angled triangles and I is set of isosceles triangles, then (a) $R = I$ (b) $R \supset I$ (c) $R \subset I$ (d) none of these Ans-(c)
19.	$\{n(n+1)/2 : n \text{ is a positive integer}\}$ is

	(a) a finite set (b) an infinite set (c) is an empty set (d) none of these Ans-(b)
20.	If $A = \{1, 2, 3, 5, 7\}$ and $B = \{x^2 : x \in A\}$ (a) $n(b) = n(A)$ (b) $n(B) > n(A)$ (c) $n(A) = n(B)$ (d) $n(A) < n(B)$ Ans-(c)
21.	$A \cup A$ is equal to (a) A (b) E (c) Φ (d) none of these Ans-(a)
22.	$A \cap A$ is equal to (a) Φ (b) A (c) E (d) none of these Ans-(b)
23.	$(A \cup B)'$ is equal to (a) $(A \cap B)'$ (b) $A \cup B'$ (c) $A' \cap B'$ (d) none of these Ans-(c) [SM, MTP May 20]
24.	$(A \cap B)'$ is equal to (a) $(A' \cup B)'$ (b) $A \cup B'$ (c) $A' \cap B'$ (d) none of these Ans-(b)
25.	$A \cup E$ is equal to (E is a superset of A) (a) A (b) E (c) Φ (d) none of these Ans-(b)
26.	$A \cap E$ is equal to (E is a superset of A) (a) A

	(b) E (c) Φ (d) none of these Ans-(a)
27.	E $\cup$ E is equal to E is a superset of A (a) E (b) Φ (c) 2E (d) none of these Ans-(a)
28.	A $\cup$ E' is equal to E is a superset of A (a) E (b) Φ (c) A (d) none of these Ans-(b)
29.	A $\cap$ Φ is equal to E is a superset of A (a) A (b) E (c) Φ (d) none of these Ans-(c)
30.	A $\cup$ A' is equal to E is a superset of A (a) E (b) Φ (c) A (d) none of these

	Ans-(a)
31.	IF E = {1, 2, 3, 4, 5, 6, 7, 8, 9}, the subset of E satisfying $5 + x > 10$ is (a) {5, 6, 7, 8, 9} (b) {6, 7, 8, 9} (c) {7, 8, 9} (d) none of these Ans-(b)
32.	If $A \Delta B = (A - B) \cup (B - A)$ and $A = \{1, 2, 3, 4\}$ $B = \{3, 5, 7\}$ then $A \Delta B$ is (a) {1, 2, 4, 5, 7} (b) {3} (c) {1, 2, 3, 4, 5, 7} (d) none of these Ans-(a)

Exercise 7 (B)

1.	If $A = \{x, y, z\}$, $B = \{p, q, r, s\}$ which of the relations on A to B are functions (a) $\{(x, p), (x, q), (y, r), (z, s)\}$, (b) $\{(x, s), (y, s), (z, s)\}$ (c) $\{(y, p), (y, q), (y, r), (z, s)\}$ (d) $\{(x, p), (y, r), (z, s)\}$ Ans-(b,d)
2.	$\{(x, y) x + y = 5\}$ where $x, y \in \mathbb{R}$ is a (a) not a function (b) a composite function (c) one-one mapping (d) none of these Ans-(c)
3.	$\{(x, y) x = 4\}$ where $x, y \in \mathbb{R}$ is a (a) not a function (b) function (c) one-one mapping

	(d) none of these Ans-(a)
4.	$\{(x, y) y = x^2\}$ where $x, y \in \mathbb{R}$ is (a) not a function (b) a function (c) inverse mapping (d) none of these Ans-(b)
5.	$\{(x, y) x < y\}$ where $x, y \in \mathbb{R}$ is (a) not a function (b) a function (c) one-one mapping (d) none of these Ans-(a)
6.	The domain of $\{(1, 7), (2, 6)\}$ is

	(a) { 1,6} (b) {7, 6 } (c) {1, 2} (d) {6, 7 } Ans-(c) [SM, MTP Nov 18]
7.	The range of $\{(3, 0) (2, 0), (1, 0) (0, 0)\}$ is (a) $\{0,0\}$ (b) $\{0\}$ (c) $\{0,0,0, 0\}$ (d) none of these Ans-(b)
8.	The domain and range of $\{(x, y) / y = x^2\}$ where $x, y \in \mathbb{R}$ is (a) (reals, natural numbers) (b) (reals, non-negative reals) (c) (reals, reals) (d) none of these Ans-(b)
9.	Let the domain of x be the set $\{1\}$. Which of the following functions gives values equal to 1 (a) $f(x) = x^2, g(x) = x$ (b) $f(x) = x, g(x) = 1 - x$ (c) $f(x) = x^2 + x + 2, g(x) = (x + 1)^2$ (d) none of these Ans-(a)
10.	If $f(x) = 1/1 - x, f(-1)$ is (a) 0 (b) $1/2$ (c) 0 (d) none of these Ans-(b)
11.	If $g\{x\} = (x - 1) / x, g(-\frac{1}{2})$ is (a) 1 (b) 2 (c) $3/2$ (d) 3 Ans-(d)
12.	if $f(x) = 1/1 - x$ and $g(x) = (x - 1) / x$ then $f \circ g(x)$ is (a) x (b) $1/x$ (c) $-x$ (d) none of these Ans-(a)
13.	If $f(x) = 1/1 - x$ and $g(x) = (x - 1) / x$ then $g \circ f(x)$ is (a) $x-1$ (b) x (c) $1/x$ (d) none of these

	Ans-(b) [SM, MTP May 20]
14.	The function $f(x) = 2^x$ is (a) one-one mapping (c) many-one (b) one-many (d) none of these Ans-(a)
15.	The range of the function $f(x) = \log_{10}(1 + x)$ for the domain of real values of x when $0 \leq x \leq 9$ is (a) $[0, 1]$ (b) $[0, 1, 2]$ (c) $\{0, 1\}$ (d) none of these Ans-(a)
16.	The Inverse function f^{-1} of $f(x) = 2x$ is (a) $1/2x$ (b) $\frac{x}{2}$ (c) $1/x$ (d) none of these Ans-(b)
17.	If $f(x) = x + 3, g(x) = x^2$, then $f \circ g(x)$ (a) $x^2 + 3$ (b) $x^2 + x + 3$ (c) $(x + 3)^2$ (d) none of these Ans-(a)
18.	If $f(x) = x + 3, g(x) = x^2$ then $f(x) \cdot g(x)$ is (a) $(x + 3)^2$ (b) $x^2 + 3$ (c) $x^3 + 3x^2$ (d) none of these Ans-(c)
19.	The Inverse h^{-1} when $h(x) = \log_{10}(x)$ is (a) $\log_{10} x$ (b) 10^x (c) $\log_{10} (1/x)$ (d) none of these Ans-(b)
20.	For the function $h(x) = 10^{1+x}$ the domain of real value of x where $0 \leq x \leq 9$ the range is (a) $10 \leq h(x) \leq 10^{10}$ (b) $0 \leq h(x) \leq 10^{10}$

	(c) $0 < h(x) < 10$ (d) none of these Ans-(a)
21.	Find $f \circ g$ for the functions $f(x) = x^8$, $g(x) = 2x^2 + 1$ (a) $x^8(2x^2 + 1)$ (b) x^8 (c) $2x^2 + 1$

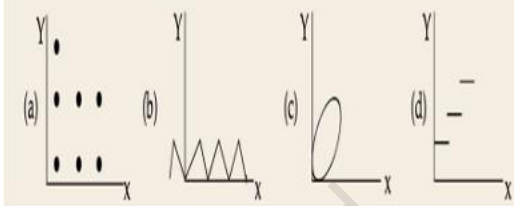
	(d) $(2x^2 + 1)^8$ Ans : (d) [MTP May 18, June 24]

Exercise 7 (C)

1.	"Is smaller than" over the set of eggs in a box is (a) Transitive (T) (b) Symmetric (S) (c) Reflexive (R) (d) Equivalence (E) Ans-(a)
2.	"Is equal to over the set of all rational numbers is (a) Transitive (T) (b) Symmetric (S) (c) Reflexive (R) (d) Equivalence Ans-(d)
3.	"has the same father as" over the set of children (a) Reflexive (b) Symmetric (c) Transitive (d) Equivalence Ans-(d)
4.	"is perpendicular to" over the set of straight lines in a given plane is (a) Reflexive (b) Symmetric (c) Transitive (d) Equivalence Ans-(b) [SM, MTP May 18, Nov 18, June 24, April 24]
5.	"is the reciprocal of" over the set of non-zero real numbers is (A) Symmetric (B) Reflexive (C) Transitive (D) None of these Ans-(a)
6.	$\{(x, y) / x \in X, y \in Y, y = x\}$ is

	(a) Reflexive (b) Symmetric (c) Transitive (d) Equivalence Ans-(d)
7.	$\{(x, y) / x + y = 2x \text{ where } x \text{ and } y \text{ are positive integers}\}$, is (a) Reflexive (b) Symmetric (c) Transitive (d) Equivalence Ans-(d)
8.	"Is the square of" over a set of real numbers is (a) Reflexive (b) Symmetric (c) Transitive (d) None of these Ans-(d)
9.	If A has 32 elements, B has 42 elements and $A \cup B$ has 62 elements, the number of elements in $A \cap B$ is (a) 12 (b) 74 (c) 10 (d) none of these Ans-(a)
10.	In a group of 20 children, 8 drink tea but not coffee and 13 like tea. The number of children drinking coffee but not tea is (a) 6 (b) 7 (c) 1 (d) none of these Ans-(b)

11.	The number of subsets of the sets $\{6, 8, 11\}$ is (a) 9 (b) 6 (c) 8 (d) none of these Ans-(c)
12.	The sets $V = \{x / x + 2 = 0\}$, $R = \{x / x^2 + 2x = 0\}$ and $S = \{x : x^2 + x - 2 = 0\}$ are equal to one another if x is equal to. (a) -2 (b) 2 (c) 1/2 (d) none of these Ans-(a)
13.	If the universal set $E = \{x x \text{ is a positive integer } < 25\}$, $A = \{2, 6, 8, 14, 22\}$, $B = \{4, 8, 10, 14\}$ then (a) $(A \cap B)' = A' \cup B'$ (b) $(A \cap B)' = A' \cap B'$ (c) $(A' \cap B)' = \Phi$ (d) none of these Ans-(a)
14.	If the set P has 3 elements, Q four and R two then the set $P \times Q \times R$ contains (a) 9 elements (b) 20 elements (c) 24 elements (d) none of these Ans-(c)
15.	Given $A = \{2, 3\}$, $B = \{4, 5\}$, $C = \{5, 6\}$ then $A \times (B \cap C)$ (a) $\{(2, 5), (3, 5)\}$ (b) $\{(5, 2), (5, 3)\}$ (c) $\{(2, 3), (5, 5)\}$ (d) none of these Ans-(a) [SM, MTP Nov 21]
16.	A town has a total population of 50,000. Out of it 28,000 read the newspaper X and 23,000 read Y while 4000 read both the papers. The number of persons not reading X and Y both is. (a) 2000 (b) 3000 (c) 2500 (d) none of these

	Ans-(b) [SM, MTP Jan 25, MTP May 20]
17.	IF $A = \{1, 2, 3, 5, 7\}$ AND $B = \{1, 3, 6, 10, 15\}$. Cardinal number of $A - B$ is (a) 3 (b) 4 (c) 6 (d) none of these Ans-(a)
18.	Which of the diagram is graph of a function  Ans-(b)
19.	At a certain conference of 100 people there are 29 Indian women and 23 Indian men. Out of these Indian people 4 are doctors and 24 are either men or doctors. There are no foreign doctors. The number of women doctors attending the conference is (a) 2 (b) 4 (c) 1 (d) none of these Ans-(c)
20.	Let $A = \{a, b\}$ Set of subsets of A is called power set of A denoted by $P(A)$ Now $n(P(A))$ is (a) 2 (b) 4 (c) 3 (d) none of these Ans-(b)
21.	Out of 2000 employees in an office 48% preferred Coffee (c), 54% liked (T), 64% used to smoke (S). Out of the total 28% used C and T, 32% used T and S and 30% preferred C and S, only 6% did none of these. The number having all the three is (a) 360 (b) 300 (c) 380 (d) none of these Ans-(a)
22.	Out of 2000 employees in an office 48%

	preferred Coffee (c), 54% liked (T), 64% used to smoke (S). Out of the total 28% used C and T, 32% used T and S and 30% preferred C and S, only 6% did none of these. The number of employees having T and 5 but not C is (a) 200 (b) 280 (c) 300 (d) none of these Ans-(b)
23.	Out of 2000 employees in an office 48% preferred Coffee (c), 54% liked (T), 64% used to smoke (S). Out of the total 28% used C and T, 32% used T and S and 30% preferred C and S, only 6% did none of these. The number of employees preferring only coffee is (a) 100 (b) 260 (c) 160 (d) none of these Ans-(c)
24.	If $f(x) = x + 3$, $g(x) = x^2$, then $g \circ f(x)$ is (a) $(x + 3)^2$

	(b) $x^2 + 3$ (c) $x^2 (x + 3)$ (d) none of these Ans - (a)
25.	If $f(x) = 1/1 - x$ then $f^{-1}(x)$ is (a) $1 - x$ (b) $(x - 1) / x$ (c) $x / (x - 1)$ (d) none of these Ans-(b)

Additional Question Bank

1.	Following set notations represent: $A \subset B$; $x \notin A$; $A \supset B$; $\{0\}$; $A \not\subset B$ (a) A is a proper subset of B; x is not an element of A; A contains B; singleton with an only element zero; A is not contained in B. (b) A is a proper subset of B; x is an element of A; A contains B; singleton with an only element zero; A is contained in B. (c) A is a proper subset of B; x is not an element of A; A does not contains B; contains elements other than zero; A is not contained in B. (d) None Ans-(a)
2.	Represent the following sets in set notation: - Set of all alphabets in English language, set of all odd integers less than 25, set of all odd integers, set of positive integers x satisfying the equation $x^2 + 5x + 7 = 0$: (a) $A = \{x: x \text{ is an alphabet in English}\}$, $I = \{x: x \text{ is an odd integer} > 25\}$, $I = \{2, 4, 6, 8, \dots\}$ $I = \{x: x^2 + 5x + 7 = 0\}$ (b) $A = \{x: x \text{ is an alphabet in English}\}$, $I = \{x: x \text{ is an odd integer} < 25\}$, $I = \{1, 3, 5, 7, \dots\}$ $I = \{x / (x^2) + 5x + 7 = 0\}$ (c) $A = \{x: x \text{ is an alphabet in English}\}$, $I = \{x: x \text{ is an odd integer} \notin 25\}$, $I = \{1, 3, 5, 7, \dots\}$ $I = \{x / (x^2) + 5x + 7 = 0\}$ (d) None Ans-(b)
3.	Rewrite the following sets in a set builder form:- $A = \{a, e, i, o, u\}$ $B = \{1, 2, 3, 4, \dots\}$ C is a set of integers

	between -15 and 15. (a) $A = \{x : x \text{ is a consonant}\}$, $B = \{x : x \text{ is an irrational number}\}$, $C = \{x : -15 < x < 15 \wedge x \text{ is a fraction}\}$ (b) $A = \{x : x \text{ is a vowel}\}$, $B = \{x : x \text{ is a natural number}\}$, $C = \{x : -15^3 < x < 15^3 \wedge x \text{ is a whole number}\}$ (c) $A = \{x : x \text{ is a vowel}\}$, $B = \{x : x \text{ is a natural number}\}$, $C = \{x : -15 < x < 15 \wedge x \text{ is a whole number}\}$ (d) None Ans-(c)
4.	If $V = \{0, 1, 2, \dots, 9\}$, $X = \{0, 2, 4, 6, 8\}$, $Y = \{3, 5, 7\}$ and $Z = \{37\}$ then $Y \cup Z, (V \cup Y) \cap X, (X \cup Z) \cup V$ are respectively: - (a) $\{3, 5, 7\}, \{0, 2, 4, 6, 8\}, \{0, 1, 2, \dots, 9\}$ (b) $\{2, 4, 6\}, \{0, 2, 4, 6, 8\}, \{0, 1, 2, \dots, 9\}$ (c) $\{2, 4, 6\}, \{0, 1, 2, \dots, 9\}, \{0, 2, 4, 6, 8\}$ (d) None Ans-(a)
5.	In question No. (4) $(X \cup Y) \cap Z$ and $(\Phi \cup V) \cap \Phi$ are respectively: - (a) $\{0, 2, 4, 6, 8\}, \Phi$ (b) $\{3, 7\}, \Phi$ (c) $\{3, 5, 7\}, \Phi$ (d) None Ans-(b)
6.	If $V = \{x : x + 2 = 0\}$, $R = \{x : x^2 + x - 2 = 0, x < 0\}$ and $S = \{x : x^2 + 4x + 4 = 0\}$ then V, R, S are equal for the value of x equal to ____. (a) 0 (b) -1 (c) -2 (d) None Ans-(c)
7.	What is the relationship between the following sets? $A = \{x : x \text{ is a letter in the word flower}\}$, $B = \{x : x \text{ is a letter in the word flow}\}$, $C = \{x : x \text{ is a letter in the word wolf}\}$, $D = \{x : x \text{ is a letter in the word follows}\}$ (a) $B = C = D$ and all these are subsets of the set A (b) $B = C \neq D$ (c) $B \neq C \neq D$ (d) None Ans-(a)
8.	Comment on the correctness or otherwise of the following statements: — (i) $\{a, b, c\} = \{c, b, a\}$ (ii) $\{a, c, a, d, c, d\} \subset \{a, c, d\}$ (iii) $\{b\} \in \{\{b\}\}$ (iv) $[b] \subset \{\{b\}\}$ and $\phi \subset \{\{b\}\}$. (a) Only (iv) is incorrect (b) (i) (ii) are incorrect (c) (ii) (iii) are incorrect (d) All are incorrect Ans-(a)
9.	If $A = \{a, b, c\}$, $B = \{a, b\}$, $C = \{a, b, d\}$, $D = \{c, d\}$ and $E = \{d\}$ state which of the following statements are correct: — (i) $B \subset A$ (ii) $D \neq C$ (iii) $C \supset E$ (iv) $D \subset E$ (v) $D \subset B$ (vi) $D = A$ (vii) $B \not\subset C$ (viii) $E \subset A$ (ix) $E \not\subset B$ (x) $a \in A$ (xi) $a \subset A$ (xii) $\{a\} \in A$ (xiii) $\{a\} \subset A$ (a) (i) (ii) (iii) (ix) (x) (xiii) only are correct (b) (ii) (iii) (iv) (x) (xii) (xiii) only are correct

	(c) (i) (ii) (iv) (ix) (xi) (xiii) only are correct (d) None Ans-(a)
10.	Let $A = \{0\}$, $B = \{0, 1\}$, $C = \Phi$, $D = \{\Phi\}$, $E = \{x x \text{ is a human being 300 years old}\}$, $F = \{x x \in A \text{ and } x \in B\}$ state which of the following statements are true: — (i) $A \subset B$ (ii) $B = F$ (iii) $C \subset D$ (iv) $C = E$ (v) $A = F$ (vi) $F = 1$ and (vii) $E = C = D$ (a) (i) (iii) (iv) and (v) only are true (b) (i) (ii) (iii) and (iv) are true (c) (i) (ii) (iii) and (vi) only are true (d) None Ans-(a)
11.	If $A = \{0, 1\}$ state which of the following statements are true: — (i) $\{1\} \subset A$ (ii) $\{1\} \in A$ (iii) $\Phi \in A$ (iv) $0 \in A$ (v) $1 \subset A$ (vi) $(0) \in A$ (vii) $\Phi \subset A$ (a) (i) (iv) and (vii) only are true (b) (i) (iv) and (vi) only are true (c) (ii) (iii) and (vi) only are true (d) None Ans-(a)
12.	State whether the following sets are finite, infinite or empty: — (i) $X = \{1, 2, 3, \dots, 500\}$ (ii) $Y = \{y: y = a^2; a \text{ is an integer}\}$ (iii) $A = \{x: x \text{ is a positive integer multiple of 2}\}$ (iv) $B = \{x: x \text{ is an integer which is a perfect root of } 26 < x < 35\}$ (a) finite infinite infinite empty (b) infinite infinite finite empty (c) infinite finite infinite empty (d) None Ans-(a)
13.	If $A = \{1, 2, 3, 4\}$, $B = \{2, 3, 7, 9\}$ and $C = \{1, 4, 7, 9\}$ then (a) $A \cap B \neq \Phi$, $B \cap C \neq \Phi$, $A \cap C \neq \Phi$ but $A \cap B \cap C = \Phi$ (b) $A \cap B = \Phi$, $B \cap C = \Phi$, $A \cap C = \Phi$, $A \cap B \cap C = \Phi$ (c) $A \cap B \neq \Phi$, $B \cap C \neq \Phi$, $A \cap C \neq \Phi$, $A \cap B \cap C \neq \Phi$ (d) None Ans-(a)
14.	If the universal set is $X = \{x: x \in \mathbb{N}, 1 \leq x \leq 12\}$ and $A = \{1, 9, 10\}$, $B = \{3, 4, 6, 11, 12\}$ and $C = \{2, 5, 6\}$ are subsets of X then set $A \cup (B \cap C)$ is __ (a) $\{3, 4, 6, 12\}$ (b) $\{1, 6, 9, 10\}$ (c) $\{2, 5, 6, 11\}$ (d) None Ans-(b)
15.	If the universal set is $X = \{x: x \in \mathbb{N}, 1 \leq x \leq 12\}$ and $A = \{1, 9, 10\}$, $B = \{3, 4, 6, 11, 12\}$ and $C = \{2, 5, 6\}$ are subsets of X the set $(A \cup B) \cap (A \cup C)$ is ____ (a) $\{3, 4, 6, 12\}$ (b) $\{1, 6, 9, 10\}$ (c) $\{2, 5, 6, 11\}$ (d) None Ans-(b)
16.	A sample of income group of 1172 families was surveyed and noticed that for income groups < Rs. 6000/-, 6000/- to Rs.10999/-, Rs. 11000/-, to Rs. 15999/-, Rs. 16000 and above No. TV set is

	available to 70, 50, 20, 50 families one set is available to 152, 308, 114, 46 families and two or more sets are available to 10, 174, 84, 94 families. If $A = \{x \mid x \text{ is a family owning two or more sets}\}$, $B = \{x \mid x \text{ is a family with one set}\}$, $C = \{x \mid x \text{ is a family with income less than Rs. 6000/-}\}$, $D = \{x \mid x \text{ is a family with income Rs. 6000/- to Rs. 10999/-}\}$, $E = \{x \mid x \text{ is a family with income Rs.11000/- to Rs.15999/-}\}$, find the number of families in each of the following sets (i) $C \cap B$ (ii) $A \cup E$ (a) 152, 580 (b) 152, 20 (c) 152, 50 (d) 152, 496 Ans-(d)
17.	A sample of income group of 1172 families was surveyed and noticed that for income groups < Rs. 6000/-, 6000/- to Rs.10999/-, Rs. 11000/-, to Rs. 15999/-, Rs. 16000 and above No. TV set is available to 70, 50, 20, 50 families one set is available to 152, 308, 114, 46 families and two or more sets are available to 10, 174, 84, 94 families. If $A = \{x \mid x \text{ is a family owning two or more sets}\}$, $B = \{x \mid x \text{ is a family with one set}\}$, $C = \{x \mid x \text{ is a family with income less than Rs. 6000/-}\}$, $D = \{x \mid x \text{ is a family with income Rs. 6000/- to Rs. 10999/-}\}$, $E = \{x \mid x \text{ is a family with income Rs.11000/- to Rs.15999/-}\}$, find the number of families in each of the following sets: — (i) $(A \cup B)' \cap E$ (ii) $(C \cup D \cup E) \cap (A \cup B)'$ (a) 20, 50 (b) 152, 20 (c) 152, 50 (d) 20, 140 Ans-(d)
18.	A sample of income group of 1172 families was surveyed and noticed that for income groups < Rs. 6000/-, 6000/- to Rs.10999/-, Rs. 11000/-, to Rs. 15999/-, Rs. 16000 and above No. TV set is available to 70, 50, 20, 50 families one set is available to 152, 308, 114, 46 families and two or more sets are available to 10, 174, 84, 94 families. If $A = \{x \mid x \text{ is a family owning two or more sets}\}$, $B = \{x \mid x \text{ is a family with one set}\}$, $C = \{x \mid x \text{ is a family with income less than Rs. 6000/-}\}$, $D = \{x \mid x \text{ is a family with income Rs. 6000/- to Rs. 10999/-}\}$, $E = \{x \mid x \text{ is a family with income Rs.11000/- to Rs.15999/-}\}$, express the following sets in set notation: — (1) $\{x \mid x \text{ is a family with one set and income of less than Rs. 11000/-}\}$ (2) $\{x \mid x \text{ is a family with no set and income over Rs. 16000/-}\}$ (a) $(C \cup D) \cap B$ (b) $(A \cup B)' \cap (C \cup D \cup E)'$ (c) Both (d) None Ans-(c)
19.	A sample of income group of 1172 families was surveyed and noticed that for income groups < Rs. 6000/-, 6000/- to Rs.10999/-, Rs. 11000/-, to Rs. 15999/-, Rs. 16000 and above No. TV set is available to 70, 50, 20, 50 families one set is available to 152, 308, 114, 46 families and two or more sets are available to 10, 174, 84, 94 families. If $A = \{x \mid x \text{ is a family owning two or more sets}\}$, $B = \{x \mid x \text{ is a family with one set}\}$, $C = \{x \mid x \text{ is a family with income less than Rs. 6000/-}\}$, $D = \{x \mid x \text{ is a family with income Rs. 6000/- to Rs. 10999/-}\}$, $E = \{x \mid x \text{ is a family with income Rs.11000/- to Rs.15999/-}\}$, express the following sets in set notation: — (i) $\{x \mid x \text{ is a family with two or more sets or income of Rs. 11000/- to Rs. 15999/-}\}$ (ii) $\{x \mid x \text{ is a family with no set}\}$ (a) $(A \cup E)$

	(b) $(A \cap B)'$ (c) Both (d) None Ans-(c)
20.	If $A = \{a, b, c, d\}$ list the element of power set P (a) (a) $[\Phi \{a\} \{b\} \{c\} \{d\} (a, b) \{a, c\} \{a, d\} \{b, c\} \{b, d\} \{c, d\}]$ (b) $\{a, b, c\} \{a, b, d\} \{a, c, d\} \{b, c, d\}$ (c) $\{a, b, c, d\}$ (d) All the above elements are in P (a) Ans-(d)
21.	If four members a, b, c, d of a decision making body are in a meeting to pass a resolution where rule of majority prevails list the wining coalitions. Given that a, b, c, d own 50%, 20%, 15%, 15% shares each. (a) $\{a, b\} \{a, c\} \{a, d\} \{a, b, c\} \{a, b, d\} \{a, b, c, d\}$ (b) $\{b, c, d\}$ (c) $\{b, c\} \{b, d\} \{c, d\} \{a, c, d\} \{b, c, d\} \{a\} \{b\} \{c\} \{d\} \Phi$ (d) None Ans-(a)
22.	If four members a, b, c, d of a decision making body are in a meeting to pass a resolution where rule of majority prevails list the wining coalitions. Given that a, b, c, d own 50%, 20%, 15%, 15% shares each. list the blocking conditions (a) $\{a, b\} \{a, c\} \{a, d\} \{a, b, c\} \{a, b, d\} \{a, b, c, d\}$ (b) $\{b, c, d\}$ (c) $\{b, c\} \{b, d\} \{c, d\} \{a, c, d\} \{b, c, d\} \{a\} \{b\} \{c\} \{d\} \Phi$ (d) None Ans-(b)
23.	If four members a, b, c, d of a decision making body are in a meeting to pass a resolution where rule of majority prevails list the wining coalitions. Given that a, b, c, d own 50%, 20%, 15%, 15% shares each. List the losing conditions. (a) $\{a, b\} \{a, c\} \{a, d\} \{a, b, c\} \{a, b, d\} \{a, b, c, d\}$ (b) $\{b, c, d\}$ (c) $\{b, c\} \{b, d\} \{c, d\} \{a, c, d\} \{b, c, d\} \{a\} \{b\} \{c\} \{d\} \Phi$ (d) None Ans-(c)
24.	If $A = \{a, b, c, d, e, f\}$ $B = \{a, e, i, o, u\}$ and $C = \{m, n, o, p, q, r, s, t, u\}$ then $A \cup B$ is (a) $\{a, b, c, d, e, f, i, o, u\}$ (b) $\{a, b, c, i, o, u\}$ (c) $\{d, e, f, i, o, u\}$ (d) None Ans-(a)
25.	If $A = \{a, b, c, d, e, f\}$ $B = \{a, e, i, o, u\}$ and $C = \{m, n, o, p, q, r, s, t, u\}$ then $A \cup C$ is (a) $\{a, b, c, d, e, f, m, n, o, p, q, r, s, t, u\}$ (b) $\{a, b, c, s, t, u\}$ (c) $\{d, e, f, p, q, r\}$ (d) None Ans-(a)
26.	If $A = \{a, b, c, d, e, f\}$ $B = \{a, e, i, o, u\}$ and $C = \{m, n, o, p, q, r, s, t, u\}$, then $B \cup C$ is (a) $\{a, e, i, o, u, m, n, p, q, r, s, t\}$ (b) $\{a, e, i, r, s, t\}$ (c) $\{i, o, u, p, q, r\}$

	(d) None Ans-(a)
27.	If $A = \{a, b, c, d, e, f\}$ $B = \{a, e, i, o, u\}$ and $C = \{m, n, o, p, q, r, s, t, u\}$, $A - B$ is (a) $\{b, c, d, f\}$ (b) $\{a, e, i, o\}$ (c) $\{m, n, p, q\}$ (d) None Ans-(a)
28.	If $A = \{a, b, c, d, e, f\}$ $B = \{a, e, i, o, u\}$ and $C = \{m, n, o, p, q, r, s, t, u\}$ $A \cap B$ is (a) $\{a, e\}$ (b) $\{i, o\}$ (c) $\{o, u\}$ (d) None Ans-(a)
29.	If $A = \{a, b, c, d, e, f\}$ $B = \{a, e, i, o, u\}$ and $C = \{m, n, o, p, q, r, s, t, u\}$ $B \cap C$ is (a) $\{a, e\}$ (b) $\{i, o\}$ (c) $\{o, u\}$ (d) None Ans-(c)
30.	If $A = \{a, b, c, d, e, f\}$ $B = \{a, e, i, o, u\}$ and $C = \{m, n, o, p, q, r, s, t, u\}$, $A \cup (B - C)$ is (a) $\{a, b, c, d, e, f, i\}$ (b) $\{a, b, c, d, e, f, o\}$ (c) $\{a, b, c, d, e, f, u\}$ (d) None Ans-(a)
31.	If $A = \{a, b, c, d, e, f\}$ $B = \{a, e, i, o, u\}$ and $C = \{m, n, o, p, q, r, s, t, u\}$, $A \cup B \cup C$ is (a) $\{a, b, c, d, e, f, i, o, u, m, n, p, q, r, s, t\}$ (b) $\{a, b, c, r, s, t\}$ (c) $\{d, e, f, n, p, q\}$ (d) None Ans-(a)
32.	If $A = \{a, b, c, d, e, f\}$ $B = \{a, e, i, o, u\}$ and $C = \{m, n, o, p, q, r, s, t, u\}$, $A \cup B \cup C$ is (a) Φ (b) $\{a, e\}$ (c) $\{m, n\}$ (d) None Ans-(a)
33.	If $A = \{3, 4, 5, 6\}$ $B = \{3, 7, 9, 5\}$ and $C = \{6, 8, 10, 12, 7\}$ then A' is (given that the universal set $U = \{3, 4, \dots, 11, 12, 13\}$) (a) $\{7, 8, \dots, 12, 13\}$ (b) $\{4, 6, 8, 10, \dots, 13\}$ (c) $\{3, 4, 5, 9, 11, 13\}$ (d) None Ans-(a)

34.	If $A = \{3, 4, 5, 6\}$ $B = \{3, 7, 9, 5\}$ and $C = \{6, 8, 10, 12, 7\}$ then B' is (given that the universal set $U = \{3, 4, \dots, 11, 12, 13\}$) (a) $\{7, 8, \dots, 12, 13\}$ (b) $\{4, 6, 8, 10, \dots, 13\}$ (c) $\{3, 4, 5, 9, 11, 13\}$ (d) None Ans-(b)
35.	If $A = \{3, 4, 5, 6\}$ $B = \{3, 7, 9, 5\}$ and $C = \{6, 8, 10, 12, 7\}$ then C' is (given that the universal set $U = \{3, 4, \dots, 11, 12, 13\}$) (a) $\{7, 8, \dots, 12, 13\}$ (b) $\{4, 6, 8, 10, \dots, 13\}$ (c) $\{3, 4, 5, 9, 11, 13\}$ (d) None Ans-(c)
36.	If $A = \{3, 4, 5, 6\}$ $B = \{3, 7, 9, 5\}$ and $C = \{6, 8, 10, 12, 7\}$ then $(A')'$ is (given that the universal set $U = \{3, 4, \dots, 11, 12, 13\}$) (a) $\{3, 4, 5, 6\}$ (b) $\{3, 7, 9, 5\}$ (c) $\{8, 10, 11, 12, 13\}$ (d) None Ans-(a)
37.	If $A = \{3, 4, 5, 6\}$ $B = \{3, 7, 9, 5\}$ and $C = \{6, 8, 10, 12, 7\}$ then $(B')'$ is (given that the universal set $U = \{3, 4, \dots, 11, 12, 13\}$) (a) $\{3, 4, 5, 6\}$ (b) $\{3, 7, 9, 5\}$ (c) $\{8, 10, 11, 12, 13\}$ (d) None Ans-(b)
38.	If $A = \{3, 4, 5, 6\}$ $B = \{3, 7, 9, 5\}$ and $C = \{6, 8, 10, 12, 7\}$ then $(A \cup B)'$ is (given that the universal set $U = \{3, 4, \dots, 11, 12, 13\}$) (a) $\{3, 4, 5, 6\}$ (b) $\{3, 7, 9, 5\}$ (c) $\{8, 10, 11, 12, 13\}$ (d) None Ans-(c)
39.	If $A = \{3, 4, 5, 6\}$ $B = \{3, 7, 9, 5\}$ and $C = \{6, 8, 10, 12, 7\}$ the set $(A \cap B)'$ is (given that the universal set $U = \{3, 4, \dots, 11, 12, 13\}$) (a) $\{8, 10, 11, 12, 13\}$ (b) $\{4, 6, 7, \dots, 13\}$ (c) $\{3, 4, 5, 7, 8, \dots, 13\}$ (d) None Ans-(b)
40.	If $A = \{3, 4, 5, 6\}$ $B = \{3, 7, 9, 5\}$ and $C = \{6, 8, 10, 12, 7\}$ the set $A' \cup C'$ is (given that the universal set $U = \{3, 4, \dots, 11, 12, 13\}$) (a) $\{8, 10, 11, 12, 13\}$ (b) $\{4, 6, 7, \dots, 13\}$ (c) $\{3, 4, 5, 7, 8, \dots, 13\}$

	(d) None Ans-(c)
41.	If $A = \{1, 2, \dots, 9\}$, $B = \{2, 4, 6, 8\}$, $C = \{1, 3, 5, 7, 9\}$, $D = \{3, 4, 5\}$ and $E = \{3, 5\}$ what is set S if it is also given that $S \subset D$ and $S \not\subset B$ (a) $\{3, 5\}$ (b) $\{2, 4\}$ (c) $\{7, 9\}$ (d) None Ans-(a)
42.	If $A = \{1, 2, \dots, 9\}$, $B = \{2, 4, 6, 8\}$, $C = \{1, 3, 5, 7, 9\}$, $D = \{3, 4, 5\}$ and $E = \{3, 5\}$ what is set S if it is also given that $S \subset B$ and $S \not\subset C$ (a) $\{3, 5\}$ (b) $\{2, 4\}$ (c) $\{7, 9\}$ (d) None Ans-(b)
43.	If $U = \{1, 2, \dots, 9\}$ be the universal set $A = \{1, 2, 3, 4\}$ and $B = \{2, 4, 6, 8\}$ then the set $A \cup B$ is (a) $\{1, 2, 3, 4, 6, 8\}$ (b) $\{2, 4\}$ (c) $\{5, 6, 7, 8, 9\}$ (d) $\{5, 7, 9\}$ Ans-(a)
44.	If $U = \{1, 2, \dots, 9\}$ be the universal set $A = \{1, 2, 3, 4\}$ and $B = \{2, 4, 6, 8\}$ then the set $A \cap B$ is (a) $\{1, 2, 3, 4, 6, 8\}$ (b) $\{2, 4\}$ (c) $\{5, 6, 7, 8, 9\}$ (d) $\{5, 7, 9\}$ Ans-(b)
45.	If $U = \{1, 2, \dots, 9\}$ be the universal set $A = \{1, 2, 3, 4\}$ and $B = \{2, 4, 6, 8\}$ then the set A' is (a) $\{1, 2, 3, 4, 6, 8\}$ (b) $\{2, 4\}$ (c) $\{5, 6, 7, 8, 9\}$ (d) $\{5, 7, 9\}$ Ans-(c)
46.	If $U = \{1, 2, \dots, 9\}$ be the universal set $A = \{1, 2, 3, 4\}$ and $B = \{2, 4, 6, 8\}$ then the set $(A \cup B)'$ is (a) $\{1, 2, 3, 4, 6, 8\}$ (b) $\{2, 4\}$ (c) $\{5, 6, 7, 8, 9\}$ (d) $\{5, 7, 9\}$ Ans-(d)
47.	If $U = \{1, 2, \dots, 9\}$ be the universal set $A = \{1, 2, 3, 4\}$ and $B = \{2, 4, 6, 8\}$ then the set $(A \cap B)'$ is (a) $\{1, 2, 3, 4, 6, 8\}$ (b) $\{2, 4\}$ (c) $\{5, 6, 7, 8, 9\}$ (d) $\{1, 3, 5, 6, 7, 8, 9\}$ Ans-(d)
48.	Let $P = (1, 2, x)$, $Q = (a \times y)$, $R = (x, y, z)$ then $P \times Q$ is (a) $\{(1, a) (1, x) (1, y); (2, a) (2, x) (2, y); (x, a) (x, x) (x, y)\}$ (b) $\{(1, x); (1, y); (1, z); (2, x); (2, y); (2, z); (x, x) (x, y) (x, z)\}$

	(c) $\{(a, x) (a, y) (a, z); (x, x) (x, y) (x, z); (y, x) (y, y) (y, z)\}$ (d) $\{(1, x) (1, y) (2, x) (2, y) (x, x) (x, y)\}$ Ans-(a)
49.	Let $P = (1, 2, x)$, $Q = (a \times y)$, $R = (x, y, z)$ then $P \times R$ is (a) $\{(1, a) (1, x) (1, y); (2, a) (2, x) (2, y); (x, a) (x, x) (x, y)\}$ (b) $\{(1, x); (1, y); (1, z); (2, x); (2, y); (2, z); (x, x) (x, y) (x, z)\}$ (c) $\{(a, x) (a, y) (a, z); (x, x) (x, y) (x, z); (y, x) (y, y) (y, z)\}$ (d) $\{(1, x) (1, y) (2, x) (2, y) (x, x) (x, y)\}$ Ans-(b)
50.	Let $P = (1, 2, x)$, $Q = (a \times y)$, $R = (x, y, z)$ then $Q \times R$ is (a) $\{(1, a) (1, x) (1, y); (2, a) (2, x) (2, y); (x, a) (x, x) (x, y)\}$ (b) $\{(1, x); (1, y); (1, z); (2, x); (2, y); (2, z); (x, x) (x, y) (x, z)\}$ (c) $\{(a, x) (a, y) (a, z); (x, x) (x, y) (x, z); (y, x) (y, y) (y, z)\}$ (d) $\{(1, x) (1, y) (2, x) (2, y) (x, x) (x, y)\}$ Ans-(c)
51.	Let $P = (1, 2, x)$, $Q = (a \times y)$, $R = (x, y, z)$ then $(P \times Q) \cap (P \times R)$ is (a) $\{(1, a) (1, x) (1, y); (2, a) (2, x) (2, y); (x, a) (x, x) (x, y)\}$ (b) $\{(1, x); (1, y); (1, z); (2, x); (2, y); (2, z); (x, x) (x, y) (x, z)\}$ (c) $\{(a, x) (a, y) (a, z); (x, x) (x, y) (x, z); (y, x) (y, y) (y, z)\}$ (d) $\{(1, x) (1, y) (2, x) (2, y) (x, x) (x, y)\}$ Ans-(d)
52.	Let $P = (1, 2, x)$, $Q = (a \times y)$, $R = (x, y, z)$ the set $(R \times Q) \cap (R \times P)$ is (a) $\{(a, x), (a, y), (a, z), (x, x), (x, y), (x, z), (y, x), (y, y), (y, z)\}$ (b) $\{(1, x), (1, y), (2, x), (2, y), (x, x), (x, y)\}$ (c) $\{(x, x), (y, x), (z, x)\}$ (d) $\{(1, a), (1, x), (1, y), (2, a), (2, x), (2, y), (x, a), (x, x), (x, y), (x, 1), (x, 2), (y, 1), (y, 2), (y, x), (z, 1), (z, 2), (z, x)\}$ Ans-(c)
53.	Let $P = (1, 2, x)$, $Q = (a \times y)$, $R = (x, y, z)$ the set $(P \times Q) \cup (R \times P)$ is (a) $\{(a, x), (a, y), (a, z), (x, x), (x, y), (x, z), (y, x), (y, y), (y, z)\}$ (b) $\{(1, x), (1, y), (2, x), (2, y), (x, x), (x, y)\}$ (c) $\{(x, x), (y, x), (z, x)\}$ (d) $\{(1, a), (1, x), (1, y), (2, a), (2, x), (2, y), (x, a), (x, x), (x, y), (x, 1), (x, 2), (y, 1), (y, 2), (y, x), (z, 1), (z, 2), (z, x)\}$ Ans-(d)
54.	If P has three elements Q four and R two how many elements does the Cartesian product set $P \times Q \times R$ will have (a) 24 (b) 9 (c) 29 (d) None Ans-(a)
55.	Identify the elements of P if set $Q = \{1, 2, 3\}$ and $P \times Q = \{(4, 1), (4, 2), (4, 3), (5, 1), (5, 2), (5, 3), (6, 1), (6, 2), (6, 3)\}$ (a) $\{3, 4, 5\}$ (b) $\{4, 5, 6\}$ (c) $\{5, 6, 7\}$ (d) None Ans-(b)
56.	If $A = \{2, 3\}$, $B = \{4, 5\}$, $C = \{5, 6\}$ then $A \times (B \cup C)$ is (a) $\{(2, 4), (2, 5), (2, 6), (3, 4), (3, 5), (3, 6)\}$ (b) $\{(2, 5), (3, 5)\}$ (c) $\{(2, 4), (2, 5), (3, 4), (3, 5), (4, 5), (4, 6), (5, 5), (5, 6)\}$

	(d) none Ans-(a)
57.	If $A = \{2,3\}$, $B = \{4,5\}$, $C = \{5,6\}$ then $A \times (B \cap C)$ is (a) $\{(2,4),(2,5),(2,6),(3,4),(3,5),(3,6)\}$ (b) $\{(2,5),(3,5)\}$ (c) $\{(2,4),(2,5),(3,4),(3,5),(4,5),(4,6),(5,5),(5,6)\}$ (d) none Ans-(b)
58.	If $A = \{2,3\}$, $B = \{4,5\}$, $C = \{5,6\}$ then $(A \times B) \cap (B \times C)$ is (a) $\{(2,4),(2,5),(2,6),(3,4),(3,5),(3,6)\}$ (b) $\{(2,5),(3,5)\}$ (c) $\{(2,4),(2,5),(3,4),(3,5),(4,5),(4,6),(5,5),(5,6)\}$ (d) none Ans-(c)
59.	If A has 32 elements B has 42 elements and $A \cup B$ has 62 elements find the number of elements in $A \cap B$ (a) 74 (b) 62 (c) 12 (d) None Ans-(c)
60.	Out of a total population of 50,000 only 28,000 read Telegraph and 23,000 read Times of India while 4,000 read the both. How many do not read any paper? (a) 3,000 (b) 2,000 (c) 4,000 (d) None Ans-(a)
61.	Out 2000 staff 48% preferred coffee 54% tea and 64% cocoa. Of the total 28% used coffee and tea 32% tea and cocoa and 30% coffee and cocoa. Only 6% did none of these. Find the number having all the three. (a) 360 (b) 280 (c) 160 (d) None Ans-(a)
62.	Out 2000 staff 48% preferred coffee 54% tea and 64% cocoa. Of the total 28% used coffee and tea 32% tea and cocoa and 30% coffee and cocoa. Only 6% did none of these. Find the number having having tea and cocoa but not coffee. (a) 360 (b) 280 (c) 160 (d) None Ans-(b)
63.	Out 2000 staff 48% preferred coffee 54% tea and 64% cocoa. Of the total 28% used coffee and tea 32% tea and cocoa and 30% coffee and cocoa. Only 6% did none of these. Find the number having only coffee. (a) 360 (b) 280 (c) 160

	(d)None Ans-(c)								
64.	Complaints about works canteen had been about Mess(M) Food (F) and Service(S). Total complaints 173 were received as follows:— $n(M) = 110$, $n(F) = 55$, $n(S) = 67$, $n(M \cap F \cap S') = 20$, $n(M \cap S \cap F') = 11$ and $n(F \cap S \cap M') = 16$. Determine the complaints about all the three. (a)6 (b)53 (c)35 (d)None Ans-(a)								
65.	Complaints about works canteen had been about Mess(M) Food (F) and Service(S). Total complaints 173 were received as follows:— $n(M) = 110$, $n(F) = 55$, $n(S) = 67$, $n(M \cap F \cap S') = 20$, $n(M \cap S \cap F') = 11$ and $n(F \cap S \cap M') = 16$. Determine the complaints about about two or more than two. (a)6 (b)53 (c)35 (d)None Ans-(b)								
66.	Out of total 150 students 45 passed in Accounts 50 in Maths.30 in Costing 30 in both Accounts and Maths. 32 in both Maths and Costing 35 in both Accounts and Costing. 25 students passed in all the three subjects. Find the number who passed at least in any one of the subjects. (a)63 (b)53 (c)73 (d)None Ans-(b)								
67.	After qualifying out of 400 professionals, 112 joined industry ,120 started practice and 160 joined as paid assistants. Therewere32, who were in both practice and service 40 in both practice and assistantship and 20 in both industry and assistantship. There were 12 who did all the three. Find how many could not get any of these. (a)88 (b)244 (c) 122 (d)None Ans-(a)								
68.	After qualifying out of 400 professionals, 112 joined industry ,120 started practice and 160 joined as paid assistants. Therewere32, who were in both practice and service 40 in both practice and assistantship and 20 in both industry and assistantship. There were 12 who did all the three. Find how many of them did only one of these. (a)88 (b)244 (c) 122 (d)None Ans-(b)								
69.	A marketing research team interviews 50people about theirdrinking habits of tea coffee or milk or A B C respectively. Following data is obtained but the Manager is not sure whethertheseare consistent. <table><tr><td>Category</td><td>No.</td><td>Category</td><td>No.</td></tr><tr><td>ABC</td><td>3</td><td>A</td><td>42</td></tr></table>	Category	No.	Category	No.	ABC	3	A	42
Category	No.	Category	No.						
ABC	3	A	42						

AB	7	B	17
BC	13	C	27
AC	18		

(a) Inconsistent since $42 + 17 + 27 - 7 - 13 - 18 + 3 \neq 50$
 (b) Consistent
 (c) Cannot determine due to data insufficiency
 (d) None
 Ans-(a)

70. On a survey of 100 boys it was found that 50 used white shirt 40 red and 30 blue. 20 were habituated in using both white and red shirts 15 both red and blue shirts and 10 blue and white shirts. Find the number of boys using all the colours.
 (a) 20
 (b) 25
 (c) 30
 (d) None
 Ans-(b)

71. On a survey of 100 boys it was found that 50 used white shirt 40 red and 30 blue. 20 were habituated in using both white and red shirts 15 both red and blue shirts and 10 blue and white shirts. If 10 boys did not use any of the white red or blue colours and 20 boys used all the colours offer your comments.
 (a) Inconsistent since no. of boys used all the three colours can't more then no. of boys used two colours
 (b) Consistent
 (c) Cannot determine due to data insufficiency
 (d) None
 Ans-(a)

72. Out of 60 students 25 failed in paper (1), 24 in paper (2), 32 in paper (3), 9 in paper (1)alone, 6 in paper (2) alone, 5 in papers (2) and (3) only and 3 in papers (1) and (2) only. Find how many failed in all the three papers.
 (a) 10
 (b) 60
 (c) 50
 (d) None
 Ans-(a)

73. Out of 60 students 25 failed in paper (1), 24 in paper (2), 32 in paper (3), 9 in paper (1)alone, 6 in paper (2) alone, 5 in papers (2) and (3) only and 3 in papers (1) and (2) only. How many passed in all the three papers?
 (a) 10
 (b) 60
 (c) 50
 (d) None
 Ans-(a)

74. Asked if you will cast your vote for a party the following feedback is obtained: —

	Yes	No	Don't know
Adult Male	10	20	5
Adult Female	20	15	5
Youth over 18 years	10	5	10

If A = set of Adult C = Common set of Women and Youth Y = set of positive opinion N = set of negative opinion then $n(A')$ is
 (a) 25
 (b) 40
 (c) 20
 (d) None

Ans-(a)

75.

Asked if you will cast your vote for a party the following feedback is obtained: —

	Yes	No	Don't know
Adult Male	10	20	5
Adult Female	20	15	5
Youth over 18 years	10	5	10

If A = set of Adult C = Common set of Women and Youth Y = set of positive opinion N = set of negative opinion then set $n(A \cap C)$ is

(a) 25

(b) 40

(c) 20

(d) None

Ans-(b)

76.

Asked if you will cast your vote for a party the following feedback is obtained: —

	Yes	No	Don't know
Adult Male	10	20	5
Adult Female	20	15	5
Youth over 18 years	10	5	10

If A = set of Adult C = Common set of Women and Youth Y = set of positive opinion N = set of negative opinion the set $n(Y \cup N)$ is

(a) 25

(b) 40

(c) 20

(d) None

Ans-(c)

77.

Asked if you will cast your vote for a party the following feedback is obtained: —

	Yes	No	Don't know
Adult Male	10	20	5
Adult Female	20	15	5
Youth over 18 years	10	5	10

If A = set of Adult C = Common set of Women and Youth Y = set of positive opinion N = set of negative opinion the set $n[A \cap (Y \cap N)]$ is

(a) 25

(b) 40

(c) 20

(d) None

Ans-(c)

78.

In a market survey you have obtained the following data which you like to examine regarding its correctness

Did not use the brand	April	May	June	April & May	May & June	April & June	April May June
Percentage answering 'Yes'	59	62	62	35	33	31	22

(a) Inconsistent since $59 + 62 + 62 - 35 - 33 - 31 + 22 \neq 100$

(b) Consistent

(c) cannot determine due to data insufficiency

(d) None

Ans-(a)

79.

In his report an Inspector of an assembly line showed in respect of 100 units the following which you are require to examine

Defect	Strength(S)	Flexibility(F)	Radius(R)	S and F	S and R	F and R	S F R
No. of pieces	35	40	18	7	11	12	3

(a) No. of pieces with radius defect alone was - 2 which was impossible
 (b) Report may be accepted
 (c) Cannot be determined due to data insufficiency
 (d) None
 Ans-(a)

80. A survey of 1000 customers revealed the following in respect of their buying habits of different grades:

A grade only	A and C grades	C grade	A grade but not B	A grade	C and B grades	None
180	80	480	230	360	80	140

How many buy B grade?
 (a) 280
 (b) 400
 (c) 50
 (d) None
 Ans-(a)

81. A survey of 1000 customers revealed the following in respect of their buying habits of different grades:

A grade only	A and C grades	C grade	A grade but not B	A grade	C and B grades	None
180	80	480	230	360	80	140

how many buy C grade if and only if they do not buy B grade?
 (a) 280
 (b) 400
 (c) 50
 (d) None
 Ans-(b)

82. A survey of 1000 customers revealed the following in respect of their buying habits of different grades:

A grade only	A and C grades	C grade	A grade but not B	A grade	C and B grades	None
180	80	480	230	360	80	140

how many buy C and B grades but not the A grade?
 (a) 280
 (b) 400
 (c) 50
 (d) None
 Ans-(c)

83. Consider the following data:-

	Skilled & Direct Worker	Unskilled & Direct Worker	Skilled & Indirect Worker	Unskilled & Indirect Worker
Short Term	6	8	10	20
Medium Term	7	10	16	9
Long Term	3	2	8	0

If S M L T I denote short medium long term skilled and indirect workers respectively find the number of workers in set M.
 (a) 42
 (b) 8
 (c) 10
 (d) 43

Ans-(a)

84. Consider the following data:—

	Skilled & Direct Worker	Unskilled & Direct Worker	Skilled & Indirect Worker	Unskilled & Indirect Worker
Short Term	6	8	10	20
Medium Term	7	10	16	9
Long Term	3	2	8	0

If S M L T I denote short medium long term skilled and indirect workers respectively and find the number of workers in set $L \cap I$.

(a)42

(b) 8

(c)10

(d) 43

Ans: (b)

85. Consider the following data:—

	Skilled & Direct Worker	Unskilled & Direct Worker	Skilled & Indirect Worker	Unskilled & Indirect Worker
Short Term	6	8	10	20
Medium Term	7	10	16	9
Long Term	3	2	8	0

If S M L T I denote short medium long term skilled and indirect workers respectively and find the number of workers in set $S \cap T \cap I$.

(a)42

(b)8

(c)10

(d)43

Ans-(c)

86. Consider the following data:—

	Skilled & Direct Worker	Unskilled & Direct Worker	Skilled & Indirect Worker	Unskilled & Indirect Worker
Short Term	6	8	10	20
Medium Term	7	10	16	9
Long Term	3	2	8	0

If S M L T I denote short medium long term skilled and indirect workers respectively and find the number of workers in set $(M \cup L) \cap (T \cup I)$.

(a)42

(b)8

(c)10

(d)43

Ans-(d)

87. Consider the following data:—

	Skilled & Direct Worker	Unskilled & Direct Worker	Skilled & Indirect Worker	Unskilled & Indirect Worker

	Short Term	6	8	10	20
	Medium Term	7	10	16	9
	Long Term	3	2	8	0

If S M L T I denote short medium long term skilled and indirect workers respectively and find the number of workers in set $S \cup (S \cap I)$.

(a)42
(b)44
(c)43
(d)99
Ans-(d)

88. Consider the following data:—

	Skilled & Direct Worker	Unskilled & Direct Worker	Skilled & Indirect Worker	Unskilled & Indirect Worker
Short Term	6	8	10	20
Medium Term	7	10	16	9
Long Term	3	2	8	0

If S M L T I denote short medium long term skilled and indirect workers respectively. Find out which set of the pair has more workers as its members. Pair is $(S \cup M)'$ or L : —

(a) $(S \cup M)' > L$
(b) $(S \cup M)' < L$
(c) $(S \cup M)' = L$
(d) None
Ans-(c)

89. Consider the following data:—

	Skilled & Direct Worker	Unskilled & Direct Worker	Skilled & Indirect Worker	Unskilled & Indirect Worker
Short Term	6	8	10	20
Medium Term	7	10	16	9
Long Term	3	2	8	0

If S M L T I denote short medium long term skilled and indirect workers respectively. Find out which set of the pair has more workers as its members. Pair is $(I \cap T)'$ or $S - (I \cap S')$:—

(a) $(I \cap T)' > [S - (I \cap S')]$
(b) $(I \cap T)' < [S - (I \cap S')]$
(c) $(I \cap T)' = [S - (I \cap S')]$
(d) None
Ans-(a)

90. Out of 1000 students 658 failed in the aggregate, 166 in the aggregate and ingroup-I434 in aggregate and in group-II, 372 in group-I, 590 in group-II and 126 in both the groups. Find out how many failed in all the three.

(a)106
(b)224
(c)206
(d)464
Ans-(a)

91.	Out of 1000 students 658 failed in the aggregate, 166 in the aggregate and ingroup-I 434 in aggregate and in group-II, 372 in group-I, 590 in group-II and 126 in both the groups. How many failed in the aggregate but not in group-II? (a) 106 (b) 224 (c) 206 (d) 464 Ans-(b)
92.	Out of 1000 students 658 failed in the aggregate, 166 in the aggregate and ingroup-I 434 in aggregate and in group-II, 372 in group-I, 590 in group-II and 126 in both the groups. How many failed in group-I but not in the aggregate? (a) 106 (b) 224 (c) 206 (d) 464 Ans-(c)
93.	Out of 1000 students 658 failed in the aggregate, 166 in the aggregate and ingroup-I 434 in aggregate and in group-II, 372 in group-I, 590 in group-II and 126 in both the groups. How many failed in group-II but not in group-I? (a) 106 (b) 224 (c) 206 (d) 464 Ans-(d)
94.	Out of 1000 students 658 failed in the aggregate, 166 in the aggregate and ingroup-I 434 in aggregate and in group-II, 372 in group-I, 590 in group-II and 126 in both the groups. How many failed in aggregate or group-II but not in group-I? (a) 206 (b) 464 (c) 628 (d) 164 Ans-(c)
95.	Out of 1000 students 658 failed in the aggregate, 166 in the aggregate and ingroup-I 434 in aggregate and in group-II, 372 in group-I, 590 in group-II and 126 in both the groups. How many failed in aggregate but not in group-I and group-II? (a) 206 (b) 464 (c) 628 (d) 164 Ans-(d)

RTP MTP

1.	If $f(x) = \frac{x}{1-x}$ and $g(x) = \frac{x-1}{x}$, then $\text{gof}(x)$ is (a) $x-1$ (b) x (c) $1/x$ (d) none of these Ans : B [MTP Jan 25]

2.	The number of proper subsets of the set $\{3, 4, 5, 6, 7\}$ is (a) 32 (b) 31 (c) 30 (d) 25 Ans : (b) [MTP May 18, Nov 22, June 24]

3.	The number of subsets $\{1, 2, 5\}$ is (a) 3 (b) 8 (c) 6 (d) 9 Ans : (b) [MTP Nov 18]
4.	If $A = \{1, 2, 3\}$ then the relation $R = \{(1, 1), (2, 3), (2, 2), (3, 3), (1, 2)\}$ on A is: (a) Reflexive (b) Symmetric (c) Transitive (d) Equivalence Ans : a [MTP Nov 22, Nov 23, Dec 24]
5.	If $f(x) = x^2 - 6x + 8$ then $f(5) - f(8)$ is equal to (a) $f'(2)$ (b) $3 \cdot f'(2)$ (c) $2 \cdot f'(2)$ (d) none of these Ans : (b) [MTP May 20, Jan 25]
6.	Let $f: R \rightarrow R$ be such that $f(x) = 2x$, then $f(x+y)$ equals (a) $f(x) + f(y)$ (b) $f(x) \cdot f(y)$ (c) $f(x) \div f(y)$ (d) None of these Ans : (b) [MTP Nov 20]
7.	If $A = \{p, q, r, s\}$, $B = \{q, s, t\}$ and $C = \{m, q, n\}$ find $C - (A \cap B)$ (a) $\{m, n\}$ (b) $\{p, q\}$ (c) $\{r, s\}$ (d) $\{p, r\}$ Ans : (a) [MTP Nov 20]
8.	The set having no element is called (a) Singleton set (b) null set (c) finite set (d) Infinite set Ans : (b) [MTP Nov 20]
9.	If $f'(x) = 3x^2 + 2$ and $f(0) = 0$, find $f(2)$ (a) 5 (b) 8 (c) 10 (d) 12 Ans : (d)

	[MTP Nov 20, May 24]
10.	If A and B are two sets $A = \{1, 2, 3, 4\}$ and $B = \{2, 3, 4\}$ then $(A-B) \cup (B-A)$ (a) $\{1\}$ (b) $\{1, 2, 3\}$ (c) $\{1, 3\}$ (d) $\{1, 2, 3, 4\}$ Ans : (a) [MTP Nov 18]
11.	If $A = \{1, 2, 3, 4, 5\}$ and $B = \{6, 7, 8\}$, then cardinal number of $A \times B$ is (a) 15 (b) 5 (c) 3 (d) 8 Ans: (a) [MTP Nov 19, May 21(Similar)]
12.	The number of subsets of the set $A = \{1, 2, 3, 4, 5, 6, 7, 8\}$ is (a) 36 (b) 128 (c) 256 (d) none of these Ans: (c) [MTP Nov 19, May 21]
13.	If $f(x) = \left(\frac{x^2-4}{x-2}\right)$, then $f(2)$ is (a) 0 (b) 2 (c) 4 (d) 1 Ans: (c) [MTP Nov 19]
14.	If $f(x) = 3x^2 + 2$ and $f(0)$ then find $f(2)$ (a) 8 (b) 10 (c) 12 (d) none of these Ans: (c) [MTP Nov 19]
15.	Find $g \circ f$ for the functions $f(x) = \sqrt{x}$, $g(x) = 2x^2 + 1$ (a) $2x^2 + 1$ (b) $2x + 1$ (c) $(2x^2 + 1)(\sqrt{x})$ (d) $\sqrt{x}$ Ans : (b) [MTP Nov 21]
16.	If $f(x) = x^2 - 1$ and $g(x) = \frac{x+1}{2}$, then $\frac{f(3)}{f(3)+g(3)}$ is (a) $5/4$ (b) $4/5$

	(c) $3/5$ (d) $5/3$ Ans : (b) [MTP Nov 21]
17.	if $f(x) = x^2/e^x$, then $f'(-1)$ is equal to (a) $-3e$ (b) $1/e$ (c) e (d) none of these Ans : (a) [MTP Nov 21]
18.	If $A = \{1,2,3,4\}$ and $B = \{1,4,9,16,25\}$ is a function of f is defined set A to B where $f(x) = x^2$ then the range of f is (a) $\{1,2,3,4\}$ (b) $\{1,4,9,16\}$ (c) $\{1,4,9,16, 25\}$ (d) none of these Ans. (b) [MTP May 19]
19.	If $A = \{1,2,3,4,5,6,7\}$ and $B = \{2,4,6\}$ Cardinal number of $A \cup B$ (a) 3 (b) 16 (c) 5 (d) 7 Ans. (d) [MTP May 19]
20.	If $f(x) = x+3$ and $g(x) = x^2$, then $f \circ g(x)$ (a) x^2+3 (b) x^2+x+3 (c) $(x+3)^2$ (d) none of these Ans. (a) [SM, MTP Nov 18]
21.	A function $f(x)$ is an even function, if (a) $-f(x) = f(x)$ (b) $f(-x) = f(x)$ (c) $f(-x) = -f(x)$ (d) None of these Ans : (b) [MTP May 19]
22.	If $A = \{1, 2, 3, 4\}$ and $B = \{5, 6, 7, 6\}$, then cardinal number of the set $A \times B$ is _____ (a) 7 (b) 1 (c) 16 (d) none of these Ans : (c) [MTP May 19]

23.	Find the $f \circ g$ for the functions $f(x) = x^3$, $g(x) = x+1$ (a) $x^2(x+1)$ (b) x^2 (c) $x+1$ (d) $(x+1)^3$ Ans : (d) [MTP May 19]
24.	The number of sub sets of function $\{2, 3, 5, 6\}$ (a) 3 (b) 8 (c) 16 (d) none of these Ans : (c) [MTP May 19]
25.	$A \cap A$ is equal to (a) A (b) ϕ (c) Universal Set (d) none of these Ans : (a) [MTP Nov 18]
26.	If $f(x) = x+2$, $g(x) = 7^x$, then $g \circ f(x) =$ (a) $7^x \cdot x + 2 \cdot 7^x$ (b) 7^{x+2} (c) $49(7^x)$ (d) none of these Ans : (c) [MTP May 22, Nov 23, July 24, RTP Sep 24]
27.	If $f : \mathbb{R} \rightarrow \mathbb{R}$ is a function, defined by $f(x) = 2^x$; then $f(x+y)$ is (a) $f(x) + f(y)$ (b) $f(x) \cdot f(y)$ (c) $f(x) \div f(y)$ (d) none Ans : (b) [MTP May 22]
28.	If $f(x) = \frac{2+x}{2-x}$ then $f^{-1}(x)$ (a) $\frac{2(x-1)}{x+1}$ (b) $\frac{2(x+1)}{x-1}$ (c) $\frac{x-1}{x+1}$ (d) $\frac{x-1}{x-1}$ Ans: (a) [MTP May 22]
29.	If $A = \{1, 2, 3\}$, $B = \{3, 4\}$ and $C = \{4, 5, 6\}$, then $A \times (B \cap C) =$ (a) $\{(1,4), (2,4), (3,4)\}$ (b) $\{(4,4), (4,3), (4,1)\}$

	$(c) \{(3, 4), (2, 4)\}$ $(d) \{(1, 2), (1, 4), (1, 6), (3, 4)\}$ Ans : 1 [MTP May 22]
30.	Let R be a relation on N defined by $x + 2y = 8$. The domain of R is: (a) $\{2, 4, 8\}$ (b) $\{2, 4, 6, 8\}$ (c) $\{2, 4, 6\}$ (d) $\{1, 2, 3, 4\}$ Ans : 3 [MTP May 22]
31.	The domain of the function $f(x) = \frac{x^2 + 3x + 5}{x^2 - 5x + 4}$ is: (a) R (b) $R - \{1, 4\}$ (c) $R - \{1\}$ (d) $\{1, 4\}$ Ans : (b) [MTP May 22]
32.	The number of proper subsets of $A \cap B$, $A = \{1, 2, 3, 4, 5, 7, 8, 9, 10\}$ and $B = \{2, 4, 6, 7, 9\}$ (a) 8 (b) 15 (c) 16 (d) 64 Ans : A [MTP April 23]
33.	if $A = \{0, 1, 2, 3, 4, 5\}$ then the number of subsets of A is (a) 64 (b) 63 (c) 61 (d) 60 Ans : A [MTP April 23]
34.	If $f(x) = x^2 - 5$, evaluate $f(3)$, $f(-4)$, $f(5)$ and $f(1)$. (a) 0, 11, 20, 4 (b) -4, 11, -2, 4 (c) 4, 11, 20, -4 (d) -2, 0, 20, 5 Ans : C [MTP April 23]
35.	If $A = (1, 2, 3, 4, 5)$, $B = (2, 4)$ and $C = (1, 3, 5)$ then $(A - C) \times B$ is: (a) $\{(2, 2)(2, 4)(4, 2)(4, 4)(5, 2)(5, 4)\}$ (b) $\{(1, 2)(1, 4)(3, 2)(3, 4)(5, 2)(5, 4)\}$ (c) $\{(2, 2)(4, 2)(4, 4)(4, 5)\}$ (d) $\{(2, 2)(2, 4)(4, 2)(4, 4)\}$ Ans : B

	[MTP Dec 24]
36.	If $A = (1, 2, 3, 4, 5)$, $B = (2, 4)$ and $C = (1, 3, 5)$ then $(A - C) \times B$ is: (a) $\{(2, 2)(2, 4)(4, 2)(4, 4)(5, 2)(5, 4)\}$ (b) $\{(1, 2)(1, 4)(3, 2)(3, 4)(5, 2)(5, 4)\}$ (c) $\{(2, 2)(4, 2)(4, 4)(4, 5)\}$ (d) $\{(2, 2)(2, 4)(4, 2)(4, 4)\}$ Ans : (d) [MTP April 24, May 21]
37.	Let R is the set of real numbers, such that the function $f: R \rightarrow R$ and $g: R \rightarrow R$ are defined by $f(x) = x^2 + 3x + 1$ and $g(x) = 2x - 3$. Find (fog) : (a) $4x^2 + 6x + 1$ (b) $x^2 + 6x + 1$ (c) $4x^2 - 6x + 1$ (d) $x^2 - 6x + 1$ Ans : (c) [MTP April 24, May 21, May 24]
38.	If $f(x) = (x^2 - 4/x - 2)$, then $f(2)$ is (a) 0 (b) 2 (c) 4 (d) 1 Ans : (c) [MTP May 21]
39.	Find the sum to n terms of the series : $7 + 77 + 777 + \dots$ to n terms: (a) $7/9(10^{n+1} - 10) - 7n/9$ (b) $7/9(10^{n+1} - 10) + 7n/9$ (c) $7/81(10^{n+1} - 10) - 7n/9$ (d) $7/81(10^{n+1} - 10) + 7n/9$ Ans : (c) [MTP May 21]
40.	If $f(x) = x^k$ and $f^{-1}(1) = 10$ then the value of k is (a) 10 (b) -10 (c) $1/10$ (d) none Ans : (a) [MTP May 21]
41.	If $A = [1, 2, 3, 4]$, $B = \{2, 4, 6, 8\}$, $f(1) = 2$, $f(2) = 4$, $f(3) = 6$ and $f(4) = 8$, and $f: A \rightarrow B$ then f^{-1} is: (a) $\{(2, 1), (4, 2), (6, 3), (8, 4)\}$ (b) $\{(1, 2), (2, 4), (3, 6), (4, 8)\}$ (c) $\{(1, 4), (2, 2), (3, 6), (4, 8)\}$ (d) None of these Ans : (a) [MTP May 21]
42.	$\sum n^2$ defines:

	(a) $n(n+1)(2n+1)/6$ (b) $n(n+1)/2$ (c) $[n(n+1)/2]^2$ (d) None of these Ans : (a) [MTP May 21]
43.	The range of the relation $\{(1,0)(2,0)(3,0)(4,0)(0,0)\}$ is (a) $\{1,2,3,4,0\}$ (b) $\{0\}$ (c) $\{1,2,3,4\}$ (d) None of these Answer (b) [MTP June 23]
44.	If $f(x) = \frac{x}{\sqrt{1+x^2}}$ and $g(x) = \frac{x}{\sqrt{1-x^2}}$. Find fog? (a) x (b) $1/x$ (c) $\frac{x}{\sqrt{1-x^2}}$ (d) $x\sqrt{1-x^2}$ Ans: (a) [MTP June 23]
45.	if $f(x) = x^2-1$ and $g(x) = 2x+3$ then gof (3) (a) 71 (b) 61 (c) 41 (d) 19 Ans : (d) [MTP Nov 21, RTP Jan 25]
46.	Determine $f(x)$, given that $f'(x) = 12x^2-4x$ and $f(-3) = 17$ (a) $f(x) = 4x^3-2x^2+143$ (b) $f(x) = 6x^3-x^4+137$ (c) $f(x) = 3x^4-x^3-137$ (d) $f(x) = 4x^3-2x^2-143$ Ans : (a) [MTP Nov 22]
47.	Two finite sets have m and n elements. The total number of sub sets of first set is 56 more than the total number of subsets of the second set. The value of m and n are (a) 6,3 (b) 7,6 (c) 5,1 (d) 8,7 Ans : (a) [MTP Nov 22]
48.	IF $f(p) = \frac{1}{1-p}$, then f^{-1} is (a) $1-p$ (b) $\frac{p-1}{p}$

	(c) $\frac{p}{p-1}$ (d) $\frac{1}{p}$ Ans : (b) [MTP Nov 22]
49.	The function $f(x) = \frac{x^2-9}{x-3}$ is undefined at $x = 3$. What value must be assigned to $f(3)$, if $f(x)$ is to be continuous at $x = 3$? (a) 6 (b) 0 (c) 9 (d) 3 Ans: (a) [RTP May 25]
50.	$\lim_{n \rightarrow \infty} \left(\frac{1}{3} + \frac{1}{3^2} + \frac{1}{3^3} + \dots + \frac{1}{3^n} \right)$ is equal to (a) $1/2$ (b) $1/3$ (c) 2 (d) 1 Ans: (a) [RTP May 25]
51.	If $f : \mathbb{R} \rightarrow \mathbb{R}$ is a function, defined by $f(x) = 10x-7$, if $g(x) = f^{-1}(x)$, then $g(x)$ is equal to (a) $\frac{1}{10x-7}$ (b) $\frac{1}{10x+7}$ (c) $\frac{10x+7}{x+7}$ (d) $\frac{10}{x-7}$ Ans: (c) [RTP May 25]
52.	If $A = (1,2,3,4,5)$, $B = (2,4)$ and $C = (1,3,5)$ then $(A-C) \times B$ is (a) $\{(2,2), (2,4), (4,2), (4,4), (5,2), (5,4)\}$ (b) $\{(1,2), (1,4), (3,2), (3,4), (5,2), (5,4)\}$ (c) $(2,2), (4,2), (4,4), (4,5)$ (d) $(2,2), (2,4), (4,2), (4,4)$ Ans: (d) [RTP May 25]
53.	If $f(x) = (x+1)^{x+1}$ then find $f'(0)$ (a) 0 (b) 1 (c) -1 (d) 2 Ans : (b) [MTP July 24]
54.	The relation $R = \{(1,1), (2,2), (3,3), (1,2), (2,3), (1,3)\}$ on the set $A = \{1,2,3\}$ is: (a) reflexive but not symmetric (b) reflexive but not transitive (c) symmetric and transitive

	(d) neither symmetric nor transitive Ans : (a) [MTP July 24]
55.	Which term of The sequence 2, 4, 8, 16 is 2048 ? (a) 9 (b) 10 (c) 11 (d) None of these Ans : (c) [MTP Nov 22]
56.	Let A be the set of squares of natural numbers and let $x \in A, y \in A$ then (a) $X + Y \in A$ (b) $X - Y \in A$ (c) $x/y \in A$ (d) $xy \in A$ Ans : (d) [MTP Nov 22]
57.	Given the function $f(x) = (2x + 3)$, then the value of $f(2x) - 2f(x) + 3$ will be:

	(a) 3 (b) 2 (c) 1 (d) 0 Ans : (d) [MTP May 24]
58.	If $f(x) = 2x + 2$ and $g(x) = x^2$, then the value of $\text{fog}(4)$ is: (a) 18 (b) 22 (c) 34 (d) 128 Ans : C [MTP Dec 23]
59.	If $f(x) = x^3$ then $f'(1) = ?$ (a) $1/6$ (b) $-1/6$ (c) $5/6$ (d) $-5/6$ Ans: B [MTP Nov 23]

CHAPTER 8 BASIC CONCEPTS OF DIFFERENTIAL AND INTEGRAL CALCULUS

Exercise 8A

1.	The gradient of the curve $y = 2x^3 - 3x^2 - 12x + 8$ at $x = 0$ is (a) -12 (b) 12 (c) 0 (d) None of these Ans: (a)
2.	The gradient of the curve $y = 2x^3 - 5x^2 - 3x$ at $x = 0$ is (a) 3 (b) -3 (c) 1/3 (d) None of these Ans: (b) [SM, MTP May 20, Jan 25]
3.	The derivative of $y = \sqrt{x+1}$ is (a) $1/\sqrt{x+1}$ (b) $-1/\sqrt{x+1}$ (c) $1/2\sqrt{x+1}$ (d) None of these Ans: (c)
4.	If $f(x) = e^{ax^2+bx+c}$ the $f'(x)$ is (a) e^{ax^2+bx+c} (b) $e^{ax^2+bx+c}(2ax+b)$ (c) $2ax+b$ (d) None of these Ans: (b)
5.	If $f(x) = \frac{x^2+1}{x^2-1}$ then $f'(x)$ is (a) $-4x/(x^2-1)^2$ (b) $4x/(x^2-1)^2$ (c) $x/(x^2-1)^2$ (d) None of these Ans: (a)
6.	If $y = x(x-1)(x-2)$ then $\frac{dy}{dx}$ is (a) $3x^2 - 6x + 2$ (b) $-6x + 2$ (c) $3x^2 + 2$ (d) None of these Ans: (a) [SM, MTP April 23]
7.	If $xy = 1$ then $y^2 + dy/dx$ is equal to

	(a) 1 (b) 0 (c) -1 (d) None of these Ans: (b) [SM, MTP May 22]
8.	The derivative of the function $\sqrt{x} + \sqrt{x}$ is (a) $\frac{1}{2\sqrt{x}+\sqrt{x}}$ (b) $1 + \frac{1}{2\sqrt{x}}$ (c) $\frac{1}{2\sqrt{x}+\sqrt{x}}(1 + \frac{1}{2\sqrt{x}})$ (d) None of these Ans: (c)
9.	Given $e^{-xy} - 4xy = 0$, $\frac{dy}{dx}$ can be proved to be (a) $-y/x$ (b) y/x (c) x/y (d) None of these Ans: (a)
10.	If $\frac{x^2}{a^2} - \frac{y^2}{a^2} = 1$, $\frac{dy}{dx}$ can be expressed as (a) $\frac{x}{y}$ (b) $\frac{x}{\sqrt{x^2-a^2}}$ (c) $\frac{1}{\sqrt{\frac{x^2}{a^2}-1}}$ (d) None of these Ans: (a)&(b)
11.	If $\log(x/y) = x + y$, $\frac{dy}{dx}$ may be found to be (a) $\frac{y(1-x)}{x(1+y)}$ (b) $\frac{y}{x}$ (c) $\frac{1-x}{1+y}$ (d) None of these Ans: (a)
12.	If $f(x, y) = x^3 + y^3 - 3axy = 0$, $\frac{dy}{dx}$ can be found out as (a) $\frac{ay-x^2}{y^2+ax}$ (b) $\frac{ay-x^2}{y^2-ax}$ (c) $\frac{ay+x^2}{y^2-ax}$ (d) None of these Ans: (b)

13.	Given $x = at^2$, $y = 2at$; $\frac{dy}{dx}$ is calculated as (a) t (b) $-1/t$ (c) $1/t$ (d) None of these Ans: (c)	20.	If $x^3 - 2x^2y^2 + 5x + y - 5 = 0$ then $\frac{dy}{dx}$ at $x = 1$, $y = 1$ is equal to (a) $4/3$ (b) $-4/3$ (c) $3/4$ (d) None of these Ans: (a)
14.	Given $x = 2t+5$, $y = t^2 - 2$; $\frac{dy}{dx}$ is calculated as (a) t (b) $-1/t$ (c) $1/t$ (d) None of these Ans: (a) [SM, MTP Nov 18, May 19(Similar), May 21, RTP May 25, sep 24]	[SM, MTP May 21]	
15.	If $y = \frac{1}{\sqrt{x}}$ then $\frac{dy}{dx}$ is equal to (a) $\frac{1}{2x\sqrt{x}}$ (b) $-\frac{1}{x\sqrt{x}}$ (c) $-\frac{1}{2x\sqrt{x}}$ (d) None of these Ans: (c)	21.	The derivative of $x^2 \log x$ is (a) $1+2\log x$ (b) $x(1 + 2 \log x)$ (c) $2 \log x$ (d) None of these Ans: (b)
16.	If $x = 3t^2 - 1$, $y = t^3 - t$, then $\frac{dy}{dx}$ is equal to (a) $\frac{3t^2-1}{6t}$ (b) $3t^2-1$ (c) $\frac{3t-1}{6t}$ (d) None of these Ans: (a)	22.	The derivative of $\frac{3-5x}{3+5x}$ is (a) $30/(3+5x)^2$ (b) $1/(3+5x)^2$ (c) $-30/(3+5x)^2$ (d) None of these Ans: (c)
17.	For the curve $x^2 + y^2 + 2gx + 2hy = 0$, the value of $\frac{dy}{dx}$ at $(0,0)$ is (a) $-g/h$ (b) g/h (c) h/g (d) none of these Ans: (a) [MTP May 19]	23.	Let $y = \sqrt{2x} + 3^{2x}$ then $\frac{dy}{dx}$ is equal to (a) $(1/\sqrt{2x}) + 2 \cdot 3^{2x} \log_e 3$ (b) $1/\sqrt{2x}$ (c) $2 \cdot 3^{2x} \log_e 3$ (d) None of these Ans: (a)
18.	If $y = \frac{e^{3x} - e^{2x}}{e^{3x} + e^{2x}}$, then $\frac{dy}{dx}$ is equal to (a) $2e^{5x}$ (b) $1/(e^{5x} + e^{2x})^2$ (c) $e^{5x}/(e^{5x} + e^{2x})$ (d) None of these Ans: (d)	24.	The derivative of $e^{3x^2 - 6x + 2}$ is (a) $30(1-5x)^5$ (b) $(1-5x)^5$ (c) $6(x-1) e^{3x^2 - 6x + 2}$ (d) None of these Ans: (c)
19.	Given $x = t + t^{-1}$ and $y = t - t^{-1}$ the value of $\frac{dy}{dx}$ at $t = 2$ is (a) $3/5$ (b) $-3/5$ (c) $5/3$ (d) None of these Ans: (c)	25.	If $y = \frac{e^x + 1}{e^x - 1}$ then $\frac{dy}{dx}$ is equal to (a) $\frac{-2e^x}{(e^x - 1)^2}$ (b) $\frac{2e^x}{(e^x - 1)^2}$ (c) $\frac{-2}{(e^x - 1)^2}$ (d) None of these Ans: (a)
		26.	If $x = at^2$, $y = 2at$ then $\left[\frac{dy}{dx}\right]_{t=2}$ is equal to (a) $1/2$ (b) -2 (c) $-1/2$ (d) None of these Ans: (a)
		27.	Let $f(x) = \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right)^2$ then $f'(2)$ is equal to (a) $3/4$ (b) $1/2$

	(c) 0 (d) None of these Ans: (a)
28.	If $f(x) = x^2 - 6x + 8$ then $f'(5) - f'(8)$ is equal to (a) $f'(2)$ (b) $3f'(2)$ (c) $2f'(2)$ (d) None of these Ans: (b)
29.	If $f(x) = x^k$ and $f'(1) = 10$ the value of k is (a) 10 (b) -10 (c) $1/10$ (d) None of these Ans: (a) [SM, MTP Nov 22]
30.	If $y = e^x + e^{-x}$ then $\frac{dy}{dx} - \sqrt{y^2 - 4}$ is equal to (a) 1 (b) -1 (c) 0 (d) None of these Ans: (c) [SM, MTP Nov 18]
31.	The derivative of $(x^2 - 1)/x$ is (a) $1 + 1/x^2$ (b) $1 - 1/x^2$ (c) $1/x^2$ (d) None of these Ans: (a)
32.	The differential coefficients of $(x^2 + 1)/x$ is (a) $1 + 1/x^2$ (b) $1 - 1/x^2$ (c) $1/x^2$ (d) None of these Ans: (b)
33.	If $y = e^{\sqrt{2x}}$ then $\frac{dy}{dx}$ is equal to _____. (a) $\frac{e^{\sqrt{2x}}}{\sqrt{2x}}$ (b) $e^{\sqrt{2x}}$ (c) $\frac{e^{\sqrt{2x}}}{\sqrt{2}}$ (d) None of these Ans: (a) [SM, MTP Nov 21]

34.	If $x = (1 - t^2)/(1 + t^2)$ $y = 2t/(1 + t^2)$ then dy/dx at $t = 1$ is _____. (a) $1/2$ (b) 1 (c) 0 (d) None of these Ans: (c)
35.	$f(x) = x^2/e^x$ then $f'(1)$ is equal to _____. (a) $-1/e$ (b) $1/e$ (c) e (d) None of these Ans: (b)
36.	7. The derivative of $e^x \log x$ (a) $\frac{e^x}{x} (1 + x \log x)$ (b) $\frac{e^x}{x} (1 + \log x)$ (c) $(1 + \log x)$ Ans: (a) [MTP May 18, June 24]
37.	If $y = \sqrt{\frac{1-x}{1+x}}$ then $(1-x^2) \frac{dy}{dx} =$ (a) y (b) $-x$ (c) $-y$ (d) 0 Ans: (c) [MTP May 18, June 24]
38.	Find the gradient of the curve $y = 3x^2 - 5x + 4$ at the point (1, 2) (a) 1 (b) -1 (c) 0 (d) 2 Ans: (a) [MTP May 18, June 24, May 24]
39.	The gradient of the curve $y = 4x^2 - 2x$ at $x = 1$ is (a) 4 (b) 6 (c) 8 (d) None of these Ans: (b) [MTP May 19]

Exercise 8 (b)

1.	Evaluate $\int 5x^2 dx$: (a) $5/3x^3 + k$

	(b) $\frac{5x^3}{3} + k$ (c) $5x^3$

	(d) none of these Ans : (b)
2.	Integration of $3 - 2x - x^4$ will become (a) $-x^2 - x^5/5$ (b) $3x - x^2 - \frac{x^5}{5} + k$ (c) $3x - x^2 + \frac{x^5}{5} + k$ (d) none of these Ans : (b)
3.	Given $f(x) = 4x^3 + 3x^2 - 2x + 5$ and $\int f(x) dx$ is (a) $x^4 + x^3 - x^2 + 5x$ (b) $x^4 + x^3 - x^2 + 5x + k$ (c) $12x^2 + 6x - 2x^2$ (d) none of these Ans : (b)
4.	Evaluate $\int (x^2 - 1) dx$ (a) $x^5/5 - 2/3 x^3 + x + k$ (b) $\frac{x^3}{3} - x + k$ (c) $2x$ (d) none of these Ans : (b) [SM, MTP May 21]
5.	$\int (1 - 3x)(1 + x) dx$ is equal to (a) $x - x^2 - x^3$ (b) $x^3 - x^2 + x$ (c) $x - x^2 - x^3 + k$ (d) none of these Ans : (c)
6.	$\int [\sqrt{x} - \frac{1}{\sqrt{x}}] dx$ is equal to (a) $\frac{2}{3} x^{3/2} - 2x^{1/2} + k$ (b) $\frac{2}{3} \sqrt{x} - 2\sqrt{x} + k$ (c) $\frac{1}{2\sqrt{x}} + \frac{1}{2x\sqrt{x}} + k$ (d) none of these Ans : (a)
7.	The integral of $px^3 + qx^2 + rk + w/x$ is equal to (a) $px^2 + qx + r + k$ (b) $px^3/3 + qx^2/2 + rx$ (c) $3px + 2q - w/x^2$ (d) none of these Ans : (d)
8.	Use method of substitution to integrate the function $f(x) = (4x + 5)^6$ and the answer is (a) $1/28 (4x + 5)^7 + k$ (b) $(4x + 5)^7/7 + k$ (c) $(4x + 5)^7/7$ (d) none of these Ans : (a)
9.	Use method of substitution to evaluate

	$\int (x^2 + 4)^5 dx$ and the answer is (a) $(x^2 + 4)^6 + k$ (b) $1/12 (x^2 + 4)^6 + k$ (c) $(x^2 + 4)^6 / + k$ (d) none of these Ans : (b)
10.	Integrate $(x+a)^n$ and the result will be (a) $\frac{(x+a)^{n+1}}{n+1} + k$ (b) $\frac{(x+a)^{n+1}}{n+1}$ (c) $(x+a)^n + 1$ (d) none of these Ans : (a)
11.	$\int 8x^2 / (x^3 + 2)^3 dx$ is equal to (a) $-4/3(x^3 + 2)^2 + k$ (b) $-\frac{4}{3(x^3+2)^2} + k$ (c) $\frac{4}{3(x^3+2)^2} + k$ (d) none of these Ans : (b)
12.	Using method of partial fraction the integration of $f(x)$ when $f(x) = \frac{1}{x^2 - a^2}$ and the answer is (a) $\log x - \frac{a}{x+a} + k$ (b) $\log(x - a) - \log(x + a) + k$ (c) $\frac{1}{2a} \log\left(\frac{x-a}{x+a}\right) + k$ (d) none of these Ans : (c)
13.	Use integration by parts to evaluate $\int x^2 e^{3x} dx$ (a) $x^2 e^{3x}/3 - 2x e^{3x}/9 + 2/27 e^{3x} + k$ (b) $x^2 e^{3x} - 2x e^{3x} + 2e^{3x} + k$ (c) $e^{3x}/3 - x e^{3x}/9 + 2e^{3x} + k$ (d) none of these Ans : (a) [SM, MTP May 21]
14.	$\int \log x dx$ is equal to (a) $x \log x + k$ (b) $x \log x - x^2 + k$ (c) $x \log x + k$ (d) none of these Ans : (b)
15.	$\int x e^x dx$ is (a) $(x - 1)e^x + k$ (b) $(x - 1)e^x$ (c) $x e^x + k$ (d) none of these Ans : (a) [SM, MTP Dec 23, Dec 24]

16.	Evaluate $\int_0^1 (2x^2 - x^3) dx$ and the value is (a) $4/3 + k$ (b) $5/12$ (c) $-4/3$ (d) none of these Ans : (b)
17.	Evaluate $\int_2^4 (3x - 2)^3 dx$ and the value is (a) 104 (b) 100 (c) 10 (d) none of these Ans : (a)
18.	Evaluate $\int_0^1 xe^x dx$ and the value is (a) -1 (b) 10 (c) $10/9$ (d) +1 Ans : (d)
19.	$\int x^x (1 + \log x) dx$ is equal to (a) $x^x \log x + k$ (b) $e^{x^2} + k$ (c) $\frac{x^2}{2} + k$ (d) $x^x + c$ Ans : (d)
20.	If $f(x) = \sqrt{1+x^2}$ then $\int f(x) dx$ is (a) $\frac{2}{3} x(1+x^2)^{3/2} + k$ (b) $\frac{x}{2} \sqrt{1+x^2} + \frac{1}{2} \log(x + \sqrt{x^2+1}) + k$ (c) $\frac{2}{3} x(1+x^2)^{3/2} + k$ (d) none of these Ans : (b)
21.	$\int \frac{\sqrt{2}(x^2+1)}{\sqrt{x^2+2}} dx$ is equal to (a) $\frac{x}{\sqrt{2}} (\sqrt{x^2+2}) + k$ (b) $\sqrt{x^2+2} + k$ (c) $\frac{1}{(x^2+2)^{3/2}} + k$ (d) none of these Ans : (a)
22.	$\int (e^x + e^{-x})^2 (e^x - e^{-x}) dx$ is (a) $\frac{1}{3} (e^x + e^{-x})^3 + k$ (b) $\frac{1}{2} (e^x - e^{-x})^2 + k$ (c) $e^x + k$ (d) none of these Ans : (a)
23.	$\int_0^a [f(x) + f(-x)] dx$ is equals to (a) $\int_0^a 2f(x) dx$

	(b) $\int_{-a}^a f(x) dx$ (c) 0 (d) $\int_{-a}^a -f(-x) dx$ Ans : (b)
24.	$\int \frac{xe^x}{(x+1)^2} dx$ is equal to (a) $\frac{e^x}{x+1} + k$ (b) $\frac{e^x}{x} + k$ (c) $e^x + k$ (d) none of these Ans : (a)
25.	$\int (x^4 + \frac{3}{x}) dx$ is equal to (a) $\frac{x^5}{5} + 3\log x $ (b) $\frac{1}{5} x^5 + 3\log x + k$ (c) $\frac{1}{5} x^5 + k$ (d) none of these Ans : (b)
26.	Evaluate $\int_1^4 (2x + 5) dx$ and the value is (a) 3 (b) 10 (c) 30 (d) none of these Ans : (c) [MTP May 20, Dec 23, Jan 25, SM, April 24]
27.	$\int_1^2 \frac{2x}{1+x^2} dx$ is equal to (a) $\log_e(\frac{5}{2})$ (b) $\log_e 5 - \log_e 2$ (c) $\log_e(\frac{2}{5})$ (d) none of these Ans : (a)
28.	$\int_0^4 \sqrt{3x+4} dx$ is equal to (a) 9/112 (b) 112/9 (c) 11/9 (d) none of these Ans : (b)
29.	$\int_0^2 \frac{x+2}{x+1} dx$ is (a) $2 + \log_e 2$ (b) $2 + \log_e 3$ (c) $\log_e 3$ (d) none of these Ans : (b)
30.	The value of $\int_2^3 f(5-x) dx - \int_2^3 f(x) dx$ is

	(a) 1 (b) 0 (c) -1 (d) none of these Ans : (b)
31.	$\int \frac{(x-1)e^x}{x^2} dx$ is equal to (a) $\frac{e^x}{x} + k$ (b) $\frac{e^{-x}}{x} + k$ (c) $\frac{-e^x}{x} + k$ (d) none of these Ans : (a)
32.	$\int_0^2 3x^2 dx$ is (a) 7 (b) -8 (c) 8 (d) none of these Ans : (c)
33.	Using integration by parts $\int x^3 \log x dx$ (a) $\frac{x^4}{16} + k$ (b) $\frac{x^4}{16}(4\log x - 1) + k$ (c) $4\log x - 1 + k$ (d) none of these Ans : (b)
34.	Evaluate $\int \left(\frac{e^x - e^{-x}}{e^x + e^{-x}} \right) dx$ and the value is (a) $\log_e e^x + e^{-x} $ (b) $\log_e e^x + e^{-x} + k$ (c) $\log_e e^x - e^{-x} + k$ (d) none of these Ans : (b)
35.	If $f'(x) = x - 1$, the equation of a curve $y = f(x)$ passing through the point (1, 0) is given by (a) $y = x^2 - 2x + 1$ (b) $y = \frac{x^2}{2} - x + 1$ (c) $y = \frac{x^2}{2} - x + \frac{1}{2}$ (d) none of these Ans : (c)
36.	The equation of the curve in the form $y = f(x)$

	if the curve passes through the point (1, 0) and Find $f'(x)$ $= 2x - 1$ is (a) $y = x^2 - x$ (b) $x = y^2 - y$ (c) $y = x^2$ (d) none of these Ans : (a) [MTP May 18, June 24]
37.	$\int \frac{1}{x \log x} dx = ?$ (a) $\log x + c$ (b) $\log \log x + c$ (c) $(\log x)^2 + c$ (d) none of these Ans : (b) [MTP May 18, Nov 18 June 24]
38.	$\int_1^2 \frac{2x}{1+x^2} dx$ is equal to (a) $\log_e(5/2)$ (b) $\log_e 5 - \log_e 2 + k$ (c) $\log_e(2/5)$ (d) none of these Ans : (b) [MTP May 18, June 24, RTP May 25]
39.	$\int \frac{1}{a^2 - x^2} dx$ (a) $\frac{1}{2a} \log \left \frac{a+x}{a-x} \right + c$ (b) $\frac{-1}{2a} \log \left \frac{a-x}{a+x} \right + c$ (c) $\frac{1}{2a} \log \left \frac{x-a}{x+a} \right + c$ (d) None of these Ans: (a) [MTP May 19]
40.	The equation of the curve which passes through the point (1,2) and has the slope $3x - 4$ and the point of (x, y) is (a) $2y = 3x^2 - 8x + 9$ (b) $y = 6x^2 - 8x + 9$ (c) $y = x^2 - 8x + 9$ (d) $2y = 3x^2 - 8x + c$ Ans : (a) [MTP July 24]

Exercise 8(c)

1.	The fixed cost of a new product is Rs. 18000 and the variable cost per unit is Rs 550. If demand function $p(x) = 4000 - 150x$, find the break-even values.

	(a) 15,8 (b) 7,12 (c) 3,17 (d) 5,15

	Ans: (a)
2.	Using the data (2-4) A company sells its product at Rs. 60 per unit. Fixed cost for the company is Rs. 18000 and the variable cost is estimated to be 25% of total revenue. Determine: the total revenue function . (a) $70x$ (b) $60x$ (c) $90x$ (d) $100x$ Ans: (b)
3.	A company sells its product at Rs. 60 per unit. Fixed cost for the company is Rs. 18000 and the variable cost is estimated to be 25% of total revenue. Determine the total cost function (a) $19000 + 6x$ (b) $20000 + 10x$ (c) $18000 + 15x$ (d) $4000 + 5x$ Ans: (c)
4.	A company sells its product at Rs. 60 per unit. Fixed cost for the company is Rs. 18000 and the variable cost is estimated to be 25% of total revenue. Determine the breakeven point (a) 600 (b) 400 (c) 700 (d) 1000 Ans: (b)
5.	Using the data (5-8) The total cost $C(x)$ of a company as $C(x) = 1000 + 25x + 2x^2$ where x is the output. Determine: the average cost (a) $1000/x + 25 + 2x$ (b) $1000/x + 20 + 2x$ (c) $1000/x + 30 + 3x$ (d) $1000/x + 25 + x$ Ans: (a)
6.	The total cost $C(x)$ of a company as $C(x) = 1000 + 25x + 2x^2$ where x is the output. Determine the marginal cost. (a) $30 + 4x$ (b) $25 + 4x$ (c) $50 + 4x$ (d) $50 + 5x$ Ans: (b)
7.	The total cost $C(x)$ of a company as $C(x) =$

	$1000 + 25x + 2x^2$ where x is the output. Find the marginal cost when 15 units are produced, (a) 60 (b) 90 (c) 80 (d) 85 Ans: (d)
8.	The total cost $C(x)$ of a company as $C(x) = 1000 + 25x + 2x^2$ where x is the output. Find the actual cost of producing 15 th unit. (a) 80 (b) 70 (c) 83 (d) 90 Ans: (c)
9.	Using the data (9-12) The total cost function of a firm is given $C(x) = 0.002x^3 - 0.04x^2 + 5x + 1500$, where x is the output. Determine: the average cost (a) $0.002x^2 - 0.04x + 5 + 1500/x$ (b) $0.002x^2 - 0.05x + 5 + 1500/x$ (c) $0.002x^2 - 0.05x + 5 + 1000/x$ (d) $0.002x^2 - 0.05x + 5 + 500/x$ Ans: (a)
10.	The total cost function of a firm is given $C(x) = 0.002x^3 - 0.04x^2 + 5x + 1500$, where x is the output. Determine the marginal average cost (MAC) (a) $0.004x - 0.08 - 1500/x^2$ (b) $0.004x - 0.04 - 1500/x^2$ (c) $0.004x - 0.04 - 1000/x^2$ (d) $0.001x - 0.04 - 1500/x^2$ Ans: (b)
11.	The total cost function of a firm is given $C(x) = 0.002x^3 - 0.04x^2 + 5x + 1500$, where x is the output. Find the marginal cost. (a) $0.06x^2 - 0.10x + 5$ (b) $0.06x^2 - 0.16x + 5$ (c) $0.06x^2 - 0.08x + 5$ (d) $0.05x^2 - 0.08x + 5$ Ans: (c)
12.	The total cost function of a firm is given $C(x) = 0.002x^3 - 0.04x^2 + 5x + 1500$, where x is the output. Find the rate of change of MC with respect to x . (a) $0.012x - 0.10$ (b) $0.010x - 0.08$

	(c) $0.012x + 0.08$ (d) $0.012x - 0.08$ Ans: (d)
13.	The total cost function for a company is given by $C(x) = \frac{3}{4}x^2 - 7x + 27$. Find the level of output for which $MC = AC$ (a) 8 (b) 6 (c) 9 (d) 10 Ans: (b)
14.	Using the data (14-17) The demand function for a monopolist is given by $x = 100 - 4p$, where x is the number of units of product produced and p is the price per unit. Find total revenue function (a) $25x - x^2/4$ (b) $25x + x^2/4$ (c) $25x - x^2/2$ (d) $5x - x^2/4$ Ans: (a)
15.	The demand function for a monopolist is given by $x = 100 - 4p$, where x is the number of units of product produced and p is the price per unit. Find average revenue function (a) $25 - x/6$ (b) $25 - x/4$ (c) $5 - x/4$ (d) $25 + x/4$ Ans: (b)
16.	The demand function for a monopolist is given by $x = 100 - 4p$, where x is the number of units of product produced and p is the price per unit. Find marginal revenue function (a) $25 - x/3$ (b) $25 - x/4$ (c) $5 - x/2$ (d) $25 - x/2$ Ans: (d)
17.	The demand function for a monopolist is given by $x = 100 - 4p$, where x is the number of units of product produced and p is the price per unit. Find price and quantity at which $MR = 0$. (a) 50, 12.5 (b) 70, 12.5 (c) 100, 12.5 (d) 70, 10 Ans: (a)
18.	Using the data (18-21) A firm knows that the

	demand function for one of its products is linear. It also knows that it can sell 1000 units when the price is Rs. 4 per unit and it can sell 1500 units when the price is Rs. 2 per unit. Find the demand function. (a) $2000 - 250p$ (b) $2000 - 5p$ (c) $2000 + 5p$ (d) $2000 - 25p$ Ans: (a)
19.	A firm knows that the demand function for one of its products is linear. It also knows that it can sell 1000 units when the price is Rs. 4 per unit and it can sell 1500 units when the price is Rs. 2 per unit. Find the total revenue function (a) $8 - x^2/250$ (b) $8x - x^2/50$ (c) $8x - x^2/250$ (d) $8x - x^2/25$ Ans: (c)
20.	A firm knows that the demand function for one of its products is linear. It also knows that it can sell 1000 units when the price is Rs. 4 per unit and it can sell 1500 units when the price is Rs. 2 per unit. Find the average revenue function. (a) $8 - x/50$ (b) $8 - x/25$ (c) $8 + x/250$ (d) $8 - x/250$ Ans: (d)
21.	A firm knows that the demand function for one of its products is linear. It also knows that it can sell 1000 units when the price is Rs. 4 per unit and it can sell 1500 units when the price is Rs. 2 per unit. Find the marginal revenue function. (a) $8 - x/12$ (b) $8 - x/25$ (c) $8 - x/125$ (d) $8 + x/125$ Ans: (c)
22.	A company charge Rs. 15000 for a refrigerator on orders of 20 or less refrigerator. The charge is reduced on every set by Rs. 100 per piece for each piece ordered in excess of 20. Find the largest size order the company should allow so as to receive a maximum revenue. (a) 85 (b) 80

	(c) 100 (d) 70 Ans: (a)
23.	A firm has the following demand and the average cost-functions: $x = 480 - 20p$ and $AC = 10 + \frac{x}{15}$. Determine the profit maximizing output and price of the monopolist. (a) 70,25 (b) 60,30 (c) 60,25 (d) 70,30 Ans: (c)
24.	Using the data (24-25) The marginal cost of production is $MC = 20 - 0.04x + 0.003x^2$ where x is the number of units produced. The fixed cost is Rs. 7000. Find the total cost function. (a) $C = 20x - 0.02x^2 + 0.001x^3 + 7000$ (b) $C = -20x - 0.04x^2 + 0.001x^3 + 7000$ (c) $C = 20x + 0.02x^2 + 0.001x^3 + 7000$ (d) $C = 20x - 0.02x^2 + 0.001x^3 - 7000$ Ans: (a)
25.	The marginal cost of production is $MC = 20 - 0.04x + 0.003x^2$ where x is the number of units produced. The fixed cost is Rs. 7000. Find the average cost function. (a) $AC = 20 - 0.02x + 0.001x^2 + \frac{7000}{x}$ (b) $AC = 20 - 0.02x + 0.001x^2 + \frac{x}{7000}$ (c) $AC = 20 - 0.02x + 0.001x^2 - \frac{7000}{x}$ (d) $AC = 20 + 0.02x + 0.001x^2 + \frac{x}{7000}$ Ans: (a)
26.	Using the data (26-27) The marginal cost function of manufacturing x units of a product is given by $MC = 3x^2 - 10x + 3$. The total cost of producing one unit of the product is Rs. 7. Find the total cost function (a) $C = x^3 + 5x^2 + 3x + 7$ (b) $C = x^3 - 5x^2 + 3x + 7$ (c) $C = x^3 + 5x^2 - 3x + 7$ (d) $C = x^3 - 5x^2 - 3x - 7$ Ans: (b)
27.	The marginal cost function of manufacturing x units of a product is given by $MC = 3x^2 - 10x + 3$. The total cost of producing one unit of the product is Rs. 7. Find the average cost function. (a) $AC = x^2 - 5x + 3 + \frac{7}{x}$

	(b) $AC = x^2 - 5x + 3 - \frac{7}{x}$ (c) $AC = x^2 - 5x - 3 + \frac{7}{x}$ (d) $AC = x^2 + 5x - 3 + \frac{7}{x}$ Ans: (a)
28.	Using the data (28-29) The marginal cost function of a commodity is given by $MC = \frac{14000}{\sqrt{7x+4}}$ and the fixed cost is Rs. 18000. Find the total cost function. (a) $C = 4000\sqrt{7x+4} + 10000$ (b) $C = 4000\sqrt{7x+4} - 10000$ (c) $C = 400\sqrt{7x+4} + 10000$ (d) $C = 4000\sqrt{7x^2+4} + 1000$ Ans: (a)
29.	The marginal cost function of a commodity is given by $MC = \frac{14000}{\sqrt{7x+4}}$ and the fixed cost is Rs. 18000. Find average cost of producing 3 units of the products. (a) $AC = \frac{4000}{x}\sqrt{7x+4} + \frac{10000}{x}$ (b) $AC = \frac{4000}{x}\sqrt{7x+4} + \frac{10000}{x^2}$ (c) $AC = \frac{4000}{x}\sqrt{7x+4} + \frac{x}{10000}$ (d) $AC = \frac{4000}{x}\sqrt{7x+4} + \frac{x^2}{1000}$ Ans: (b)
30.	The marginal revenue of a function $MR = 7 - 4x - x^2$. Find the total Revenue. (a) $R = 7x - \frac{4x^2}{2} - \frac{x^3}{3}$ (b) $R = 7x + \frac{4x^2}{2} - \frac{x^3}{3}$ (c) $R = 7x - \frac{4x^2}{2} + \frac{x^3}{3}$ (d) $R = 7x + \frac{4x^2}{2} + \frac{x^3}{3}$ Ans: (a)

MTP and RTP

1.	$\int e^{ax} dx$ (a) $e^x + c$ (b) $e^{ax}/a + c$ (c) $\log x + c$ (d) $e^{ax} + c$ Ans : (b) [MTP May 20, Jan 25]
2.	If $x\sqrt{1+y} + y\sqrt{1+x} = 0$, then $(1+x^2) dy/dx =$ (a) 0 (b) 1 (c) -1 (d) 2 Ans : (c) [MTP Nov 20]
3.	find dy/dx at $x=1$, when $x = t \log t$ and $y = (\log t)/t$ (a) 1 (b) -1 (c) -1/2 (d) 0 Ans : (a) [MTP Nov 20]
4.	$\int \frac{1}{(e^x-1)^2} dx =$ (a) $\log \left[\frac{e^x}{e^x-1} \right] + \frac{1}{e^x-1} + c$ (b) $\log \left[\frac{e^x-1}{e^x} \right] + \frac{1}{e^x-1} + c$ (c) $\log \left[\frac{e^x}{e^x-1} \right] - \frac{1}{e^x-1} + c$ (d) $\log \left[\frac{e^x}{e^x-1} \right] - \frac{1}{e^x+1} + c$ Ans : (c) [MTP Nov 18]
5.	if $e^{xy+xy} = e$ then $\frac{dy}{dx} =$ (a) $\frac{y}{x}$ (b) $-\frac{1}{xy}$ (c) xy (d) $\frac{x}{y}$ Ans : (b) [MTP Nov 18]
6.	if $x = at^3$; $y = 3bt^2$; then $\frac{dy}{dx} =$ (a) $\frac{3x}{2y}$ (b) $\frac{2y}{3x}$ (c) $\frac{3y}{2x}$ (d) $\frac{2x}{3y}$ Ans : (b) R
7.	$\int_0^{2a} \frac{f(x)}{f(x) + f(2a-x)} dx$

	(a) a (b) -a (c) 0 (d) 2a Ans : (a) [MTP Nov 18]
8.	If $MC = 10 - 0.01x + 0.009x^2$ where x is quantity of production and the total fixed cost = Rs.100, then the total cost is (a) $100 + 10x - 0.05x^2 + 0.0009x^3$ (b) $100 + 10x - 0.005x^2 + 0.0003x^3$ (c) $100 + 10x - 0.05x^2 + 0.0009x^3$ (d) $100 - 10x - 0.05x^2 + 0.0009x^3$ Ans : (b) [MTP Nov 18]
9.	If $y^3 \cdot x^5 = (x+y)^8$, then $\left(\frac{dy}{dx}\right)$ is (a) $\left(\frac{y}{x}\right)^2$ (b) $\left(\frac{-y}{x}\right)$ (c) $\left(\frac{y}{x^3}\right)$ (d) none of these Ans : (a) [MTP Nov 19]
10.	The gradient of the curve $x^3 + y^3 = 9$ at the point (1,2) is (a) -1/4 (b) 1/4 (c) 4 (d) -4 Ans : (b) [MTP Nov 19]
11.	if $x = \frac{2t}{1+t^2}$, $y = \frac{1+t^2}{1+t^2}$ then $\frac{dy}{dx} + \frac{x}{y}$ is (a) 1 (b) 2 (c) 0 (d) $4t^2$ Ans : (c) [MTP Nov 19]
12.	Evaluate $\int \frac{2x+1}{x(x+1)} dx$ (a) $\log(x^2 - x) + c$ (b) $\log(x^2 + x) + c$ (c) $\log(x^2 + 1) + c$ (d) none of these Ans : (b) [MTP Nov 19]
13.	Evaluate $\int_0^1 x \cdot e^x dx$ (a) e (b) e-1

	(c) $2e$ (d) 1 Ans: (d) [MTP Nov 19]
14.	Evaluate: $\int_0^5 \frac{x^2}{x^2+(5-x)^2} dx$ (a) 2.5 (b) 0 (c) -1 (d) 2 Ans: (a) [MTP Nov 21]
15.	Evaluate: $\int \left\{ \frac{1}{\log x} - \frac{1}{(\log x)^2} \right\} dx$ (a) $1/\log x + c$ (b) $x/\log x + c$ (c) $-x/\log x + c$ (d) None of these Ans: (b) [MTP Nov 21, May 19]
16.	$\int x \cdot \log x \, dx$ (a) $\frac{x^2}{2} \cdot \log x - \frac{x^2}{4} + c$ (b) $-\frac{x^2}{2} \cdot \log x - \frac{x^2}{4} + c$ (c) $\frac{x^2}{2} \cdot \log x + \frac{x^2}{4} + c$ (d) $-\frac{x^2}{2} \cdot \log x + \frac{x^2}{4} + c$ Ans. (a) [MTP May 19]
17.	$\int e^{-3x} dx =$ (a) $-\frac{1}{3} e^{-3x} + c$ (b) $\frac{1}{3} e^{-3x} + c$ (c) $-\frac{1}{3} e^{3x} + c$ (d) $-3 e^{-3x} + c$ Ans. (a) [MTP May 19]
18.	The slope of the tangent to the curve $y = x^2 - x$ at the point, where the line $y = 2$ cuts the curve in the first quadrant, is (a) 2 (b) 3 (c) -3 (d) 2 Ans. (b) [MTP May 19, July 24]
19.	$\int \frac{\sqrt{x}}{\sqrt{x} + \sqrt{2-x}} dx$ is (a) -1 (b) 0 (c) 2 (d) 1

	Ans: (d) [MTP Nov 18]
20.	Evaluate: $\int \frac{1}{x(x+1)} dx$ (a) $x + \log(x+1) + c$ (b) $x - \log(x+1) + c$ (c) $\log x - \log(x+1) + c$ (d) none of these Ans: (c) [MTP Nov 18]
21.	The value of e is (a) 2.7183 (b) 2.1786 (c) 2.1643 (d) 0 Ans: (a) [MTP Nov 18]
22.	$\int x^2 e^x dx =$ (a) $e^x (x^2 - 2x + 2) + c$ (b) $e^x (x^2 - 2) + c$ (c) $e^x (x^2 + 2x + 2) + c$ (d) $e^x (x^2 - 2x) + c$ Ans: (a) [MTP May 19]
23.	$\int e^x (x^2 + 2x) dx$ (a) $x^2 \cdot e^x + c$ (b) $x \cdot e^x + c$ (c) $-x \cdot e^x + c$ (d) $e^{-x} + c$ Ans: (a) [MTP May 22]
24.	If $y = \sqrt{x} + \frac{1}{\sqrt{x}}$ then $2x \frac{dy}{dx}$ is (a) $\sqrt{x} - \frac{1}{\sqrt{x}}$ (b) $\sqrt{x} + \frac{1}{\sqrt{x}}$ (c) $x - \frac{1}{x}$ (d) None of these Ans: (b) [MTP May 22]
25.	If $y = x^x$, then $\frac{dy}{dx}$ is: (a) $x^x (2 + \log x)$ (b) $x^x \log(ex)$ (c) $x^x \cdot \log\left(\frac{e}{x}\right)$ (d) None of these Ans: (b) [MTP May 22]
26.	Evaluate $\int 2^x x^2 dx$ (a) $\frac{2^x \cdot x^2}{2} - \frac{x \cdot 2^{x+1}}{(\log 2)^2} + \frac{2^{x+1}}{(\log 2)^2} + c$

	(b) $\frac{2^x \cdot x^3}{3} - \frac{x^2 \cdot 2^{x+1}}{(\log 2)^2} + \frac{2^{x+1}}{(\log 3)^2} + c$ (c) $\frac{2^x \cdot x^2}{3} - \frac{x^3 \cdot 2^x}{3} + \frac{2^{x+1}}{(\log 2)^3} + c$ (d) None of these Ans: (a) [MTP May 22]
27.	$\int (2x+3)^5 dx$ is (a) $\frac{(2x-3)^6}{6} + c$ (b) $\frac{(2x-3)^6}{2} + c$ (c) $\frac{(2x-3)^6}{12} + c$ (d) $\frac{(2x-3)^6}{5} + c$ Ans: (c) [MTP April 23]
28.	$\int_0^2 3x^2 dx$ is (a) 7 (b) -8 (c) 8 (d) -7 Ans: (c) [MTP April 23]
29.	if $f(x) = 2x^3 - 15x^2 + 36x + 10$ at which $f(x)$ is minimum and at which $f(x)$ is maximum. (a) at $x = 3$ and $x = 2$ (b) at $x = 3$ and $x = 2$ (c) at $x = 3$ and $x = 2$ (d) at $x = 3$ and $x = 2$ Ans : A [MTP April 23]
30.	If $\int_0^1 (3x^2 + 2x + k) dx = 0$, Find k (a) 0 (b) -1 (c) -2 (d) 1 Ans: (c) [MTP April 23]
31.	The equation of the tangent to the curve, $x^3 - 2x + 3$, at the point $(2, 7)$ is: (a) $y = 2x - 13$ (b) $y = 10x$ (c) $y = 10x - 13$ (d) $y = 10$ Ans : (c) [MTP April 24]
32.	If $x = c.t$, $y = c/t$, then dy/dx is equal to : (a) $1/t$ (b) $t.e^t$

	(c) $-1/t^2$ (d) None of these Ans : (c) [MTP April 24]
33.	$\int 2^{3x} \cdot 3^{2x} \cdot 5^{2x} dx$ (a) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^{2x}}{\log(720)} + c$ (b) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^{2x}}{\log(360)} + c$ (c) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^{2x}}{\log(1800)} + c$ (d) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^{2x}}{\log(90)} + c$ Ans: (c) [MTP April 24]
34.	If $y = 2x + 4/x$, then $x^2 \frac{d^2y}{dx^2} + x \frac{dy}{dx} - y$ yields (a) 3 (b) 1 (c) 0 (d) 4 Ans: (c) [MTP May 21, June 23]
35.	Evaluate $\int \frac{2x+1}{x(x+1)} dx$ (a) $\log(x^2 - x) + c$ (b) $\log(x^2 + x) + c$ (c) $\log(x^2 + 1) + c$ (d) None of these Ans: (b) [MTP May 21]
36.	Evaluate $\int_0^1 x^5 dx$ (a) $32/3$ (b) $1/3$ (c) $1/2$ (d) 1 Ans: (a) [MTP May 21]
37.	The slope of the tangent at the point $(2, -2)$ to the curve $x^2 + xy + y^2 - 4 = 0$ is given by : (a) 0 (b) 1 (c) -1 (d) None of these Ans: (b) [MTP June 23]
38.	$\int \left(\sqrt{x} + \frac{1}{\sqrt{x}} \right) dx$ (a) $2x^{\frac{1}{2}} \left(\frac{1}{3}x - 1 \right)$ (b) $2x^{\frac{1}{2}} \left(\frac{1}{3}x + 1 \right)$ (c) $2 \left(\frac{1}{3}x - x^{\frac{1}{2}} \right)$ (d) None of these

	Ans: (b) [MTP June 23]
39.	$\int \frac{6x+4}{(x-2)(x-3)} dx$ is equal to (a) $22\log(x-3) - 16(x-2)$ (b) $11\log(x-3) - 8(x-2)$ (c) $22\log(x-3) - 16\log(x-2)$ (d) $232\log(x-3) + 16\log(x-2)$ Ans: (c) [MTP June 23]
40.	Evaluate : $\int_0^5 \frac{x^2}{x^2 + (5-x)^2} dx$ (a) 0 (b) 1 (c) -1 (d) none of these Ans : (b) [MTP June 23]
41.	$\int 2^{3x} \cdot 3^{2x} \cdot 5^x dx$ (a) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(270)} + c$ (b) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(360)} + c$ (c) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(180)} + c$ (d) $\frac{2^{3x} \cdot 3^{2x} \cdot 5^x}{\log(90)} + c$ Ans: (b) [MTP Nov 22, June 23, July 24, RTP Jan 25]
42.	Marginal cost and marginal revenue of a commodity $C'(x)=8+6x$ and $R'(x)=30$. Fixed cost is 0. Find the profit (a) $22x + 3x^2$ (b) $22x - 3x^2$ (c) $22x - x^2$ (d) $x + 3x^2$ Ans : (b) [MTP June 23]
43.	A total cost function of a company RXL Ltd is $C(x) = 10+50x-30x^2+x^3/3$ Where x denotes the output. Find the output level at which the profit is maximum if price function is given by $450-30x$ (a) 30 (b) 40 (c) 50 (d) 20 Ans : (d) [MTP June 23]

44.	$\int_0^1 x \cdot e^x dx$ (a) -1 (b) 1 (c) e^1 (d) $1/e$ Ans : (b) [MTP Nov 22]
45.	If $f(x) = x(x^2 - 2)$ then dy/dx is (a) $3x^2 - 2$ (b) $3x^2 + 2$ (c) $x^2 - 3$ (d) x^2 Ans: (a) [MTP July 24]
46.	If $y = ae^{nx} + be^{-nx}$, then $(d^2y)/(dx^2)$ is equal to _____ (a) n^2y (b) $-n^2y$ (c) ny (d) None of these Ans : (a) [MTP Nov 22]
47.	$\int_0^1 (e^x + e^{-x}) dx$ (a) $e - e^{-1}$ (b) $e^{-1} - e$ (c) $e + e^{-1}$ (d) None of these Ans : (a) [MTP Nov 22]
48.	The slope of the tangent to the curve $y = \frac{x-1}{x+2}$ at $x = 2$ is (a) $3/16$ (b) $-3/16$ (c) $-1/4$ (d) $1/4$ Ans: (a) [MTP Nov 23]
49.	$\int_0^5 \frac{x^2 dx}{x^2 + (5-x)^2}$ (a) 5 (b) $5/2$ (c) 1 (d) None of these Ans: B [MTP Nov 23]
50.	If $u = 3t^4 + 5t^3 + 2t^2 + t + 4$, then the value of du/dt at $t = -1$ is :

	(a) 0 (b) 1 (c) 2 (d) 5 Ans : A [MTP Dec 23]
51.	if $y = e^{a \log x} + e^{x \log a}$, then $dy/dx =$ (a) $x^a + a^x$ (b) $a x^{a-1} + a^x \log a$ (c) $a x^{a-1} + x a^{x-1}$ (d) $x^x + a^a$ Ans : B [MTP Dec 23]

Chapter 9: Number Series , Coding Decoding and Odd Man Out Series

1.	6, 11, 21, 36, 56 ? (a) 42 (b) 51 (c) 81 (d) 91 ANSWER :-C
2.	10, 100, 200, 310, ? (a) 400 (b) 410 (c) 420 (d) 430 ANSWER :-D
3.	11, 13, 17, 19, 23, 25, 29, ? (a) 33 (b) 27 (c) 31 (d) 49 ANSWER :-C [SM, MTP April 24]
4.	6, 12, 21, 33, ? (a) 33 (b) 38 (c) 40 (d) 48 ANSWER :-D
5.	2, 5, 9, 14, ?, 27 (a) 20 (b) 16 (c) 18 (d) 24 ANSWER :-A
6.	6, 11, 21, ?, 56, 81 (a) 42 (b) 36 (c) 91 (d) 51 ANSWER :-B
7.	10, 18, 28, 40, 54, ?, 88 (a) 70 (b) 86 (c) 87 (d) 98 ANSWER :-A [SM, MTP Nov 18]

8.	120, 99, ?, 63, 48, 35 (a) 80 (b) 36 (c) 45 (d) 40 ANSWER :-A
9.	22, 24, 28, 36, ?, 84 (a) 44 (b) 52 (c) 38 (d) 54 ANSWER :-B
10.	4832, 5840, 6848, 7856, ? (a) 8864 (b) 8815 (c) 8846 (d) 8887 ANSWER :-A
11.	10, 100, 200, 310, 430, ? (a) 560 (b) 540 (c) 550 (d) 590 ANSWER :-A
12.	28, 33, 31, 36, 34, ? (a) 38 (b) 39 (c) 40 (d) 42 ANSWER :-B [SM, MTP Nov 22]
13.	120, 80, 40, 45, ?, 15 (a) 15 (b) 20 (c) 25 (d) 30 ANSWER :-D
14.	2, 15, 41, 80, 132, ? (a) 184 (b) 144 (c) 186 (d) 197 ANSWER :-D
15.	6, 17, 39, ?, 116

	a) 72 b) 75 c) 85 d) 80 ANSWER :- A
16.	1, 4, 10, 22, ?, 94 a) 46 b) 48 c) 49 d) 47 ANSWER :- A
17.	4, 9, 25, 49, ?, 169, 289, 361 a) 120 b) 121 c) 122 d) 164 ANSWER :- B
18.	4, 12, 36, ?, 324 a) 107 b) 109 c) 108 d) 110 ANSWER :- C
19.	1, 1, 4, 8, 9, ?, 16, 64 a) 27 b) 28 c) 32 d) 40 ANSWER :- A
20.	5760, 960, 192, ?, 16, 8 a) 47 b) 48 c) 52 d) 50 ANSWER :- B
21.	1, 2, 6, 7, 21, 22, 66, ?, 201 a) 69 b) 68 c) 67 d) 69 ANSWER :- C
22.	48, 24, 96, ?, 192 a) 48 b) 47 c) 44 d) 54 ANSWER :- A
23.	165, 195, 255, 285, ?, 375 a) 345 b) 390 c) 335

	d) 395 ANSWER :- A
24.	2, 3, 3, 5, 10, 13, 39, ?, 172, 177 a) 42 b) 44 c) 43 d) 40 ANSWER :- C
25.	7, 26, 63, 124, 215, ?, 511 a) 342 b) 343 c) 441 d) 421 ANSWER :- A
26.	3, 7, 15, 31, ?, 127 a) 62 b) 63 c) 64 d) 65 ANSWER :- B
27.	8, 28, 116, 584, ? a) 1752 b) 3502 c) 3504 d) 3508 ANSWER :- D
28.	6, 13, 28, 59, ? a) 122 b) 114 c) 113 d) 112 ANSWER :- A
29.	2, 7, 27, 107, 427, ? a) 1707 b) 4027 c) 4207 d) 1207 ANSWER :- A
30.	5, 2, 7, 9, 16, 25, 41, ? a) 65 b) 66 c) 67 d) 68 ANSWER :- B
31.	In a certain language, MADRAS is coded NBESBT, how DELHI is coded in that code? a) EMMJI b) EFMIJ c) EMFIJ d) JIFEM ANSWER :- B

32.	If RAMAN is written as 12325 and DINESH as 675489 how HAMAM is written? a) 92323 b) 92233 c) 93233 d) 93292 ANSWER :-A
33.	If RED is coded as 6720 then GREEN would be coded as a) 9207716 b) 167129 c) 1677209 d) 1672091 ANSWER :-C
34.	If A = 1, FAT = 27, FAITH = ? a) 44 b) 45 c) 46 d) 36 ANSWER :-A
35.	If BROTHER is coded 2456784, SISTER coded as 919684, what is coded for BORBERS? a) 2542849 b) 2542898 c) 2454889 d) 2524889 ANSWER :-A
36.	If DELHI is coded 73541 and CALCUTTA as 82589662, How can CALICUT be coded? a) 5279431 b) 5978213 c) 8251896 d) 8543962 ANSWER :-C [SM, MTP May 21]
37.	If CLOCK is coded 34235 and TIME is 8679, what will be code of MOTEL? a) 72894 b) 77684 c) 72964 d) 27894 ANSWER :-A
38.	If PALE is coded as 2134 and EARTH is coded as 41590, how is PEARL is coded? a) 29530 b) 24153 c) 25430 d) 254313 ANSWER :-B

39.	If LOSE is coded as 1357 and GAIN is coded as 2468 what do figure 82146 stands for a) NGLAI b) NGLIA c) GNLIA d) GNLIA ANSWER :-A [SM, MTP May 21]
40.	If MEKLF is coded as 91782 and LLLJK as 88867 how can IHJED is coded as a) 97854 b) 64512 c) 54610 d) 75632 ANSWER :-C
41.	If in a certain code language NAME is written as 4258 then what is coded as MEAN? a) 2458 b) 5842 c) 8524 d) 5824 ANSWER :-D [SM, MTP Nov 18]
42.	If GOLD is written as IQNF, how WIND can be written as code? a) YKPF b) VHCM c) XJOE d) DNIW ANSWER :-A
43.	If ROSE is written as TQUG, how BISCUIT can be written in that code? a) DKUEWKV b) CJTDVJU c) DKVEWKV d) DKUEWKY ANSWER :-A
44.	Find out the correctly coded alternative from amongst the given four alternatives (a), (b), (c), (d). LETTER: C Z N V R S W F D CODE DIGIT: 8 6 4 7 2 9 3 5 1 ZDRCVF ? a) 612875 b) 619875 c) 612845 d) 612835 ANSWER :-A
45.	Find out the correctly coded alternative from amongst the given four alternatives (a), (b), (c),

	(d). LETTER: C Z N V R S W F D CODE DIGIT: 8 6 4 7 2 9 3 5 1 WNCSZV ? a) 348267 b) 318267 c) 348957 d) 348967 ANSWER :-D																				
46.	Find out the correctly coded alternative from amongst the given four alternatives (a), (b), (c), (d). LETTER: C Z N V R S W F D CODE DIGIT: 8 6 4 7 2 9 3 5 1 RDNFVS ? a) 21679 b) 216549 c) 214579 d) 218579 ANSWER :-C																				
47.	If DELHI is coded as CCIDD, how would you encode BOMBAY? a) AJMTVT b) AMJXVS c) MJXVSU d) WXYZAX ANSWER :-B																				
48.	In a certain code, RIPPLE is written as 613382 and LIFE is written as 8192. How is PILLER written in that code? a) 318826 b) 318286 c) 618826 d) 338816 ANSWER :-A																				
49.	If PALAM could be given the code number 43, what code number can be given to SANTACRUZ? a) 123 b) 85 c) 120 d) 125 ANSWER :-A																				
50.	Directions: The number in each question below is to be codified in the following code: <table border="1"><tr><td>Digit</td><td>7</td><td>2</td><td>1</td><td>5</td><td>3</td><td>9</td><td>8</td><td>6</td><td>4</td></tr><tr><td>Letter</td><td>W</td><td>L</td><td>M</td><td>S</td><td>I</td><td>N</td><td>D</td><td>J</td><td>B</td></tr></table> 184632 a) MDJBSI b) MDJBIL c) MDJBWL	Digit	7	2	1	5	3	9	8	6	4	Letter	W	L	M	S	I	N	D	J	B
Digit	7	2	1	5	3	9	8	6	4												
Letter	W	L	M	S	I	N	D	J	B												

	d) MDBJIL ANSWER :-D
51.	In a certain code, '256' means 'You are good', '637' means 'We are bad' and '358' means 'good and bad'. Which of the following represents 'and' in that code? (a) 2 (b) 5 (c) 8 (d) 3 ANSWER :-C
52.	Find Odd man out of the following: 3, 5, 7, 15, 17, 19 a) 15 b) 17 c) 19 d) 7 ANSWER :-A
53.	Find Odd man out of the following: 10, 14, 16, 18, 23, 24, 26 a) 26 b) 23 c) 24 d) 18 ANSWER :-B
54.	Find Odd man out of the following: 1, 4, 9, 16, 24, 25, 36 a) 9 b) 24 c) 25 d) 36 ANSWER :-B
55.	Find Odd man out of the following: 41, 43, 47, 53, 61, 71, 83, 75 a) 75 b) 73 c) 71 d) 53 ANSWER :-A
56.	Find Odd man out of the following: 16, 25, 36, 73, 144, 196, 225 a) 36 b) 73 c) 196 d) 225 ANSWER :-B
57.	Find Odd man out of the following: 1, 4, 9, 16, 19, 36, 49 a) 19 b) 9 c) 49

	d) 16 ANSWER :-A
58.	Find Odd man out of the following: 1, 5, 14, 30, 49, 55, 91 a) 49 b) 30 c) 55 d) 91 ANSWER :-A
59.	Find Odd man out of the following: 835,734,642, 751, 853, 981, 532 a) 751 b) 853 c) 981 d) 532 ANSWER :-A
60.	Find Odd man out of the following: 4, 5, 7, 10, 14, 18, 25, 32 a) 7 b) 14 c) 18 d) 33 ANSWER :-C
61.	Find Odd man out of the following: 52, 51, 48, 43, 34, 27, 16 a) 27 b) 34 c) 43 d) 48 ANSWER :-B [SM, MTP Nov 18]
62.	18, 24, 21, 27, ?, 30, 27 (a) 33 (b) 30 (c) 24 (d) 21 Ans : (c) [MTP May 18, Nov 18, June 24, MTP 2 June 24]
63.	5, 7, 11, ?, 35, 67 (a) 23 (b) 28 (c) 30 (d) 19 Ans : (d) [MTP May 18, MTP 1, 2, June 24]
64.	If GARDEN is coded as 325764 and WATER as 92165, how can we code the word WARDEN in the

	same way? (a) 925764 (b) 295764 (c) 952764 (d) 957264 Ans : (a) [MTP May 18, MTP 1 & 2 June 24]
65.	If F=6, MAT=34, then how much is CAR ? (a) 21 (b) 22 (c) 25 (d) 28 Ans : (b) [MTP May 18, Nov 18, MTP 1 and 2 June 24]
66.	Find the odd one out. 1, 4, 9, 16, 20, 36, 49 (a) 1 (b) 9 (c) 20 (d) 36 Ans : (c) [MTP May 18, Nov 18]
67.	Find the odd one out. 16, 25, 36, 72, 144, 196, 225 (a) 36 (b) 72 (c) 196 (d) 225 Ans : (b) [MTP May 18, MTP 1 and 2, June 24]
68.	In a certain code language "EXAM" is coded as 39 'PAPER' is coded as 51 then PASS is coded as (a) 39 (b) 47 (c) 489 (d) 51 Ans : (d) [MTP Nov 18]
69.	Find the oddman out (a) January (b) April (c) July (d) October Ans : (b)

	[MTP Nov 18]
70.	Find the oddman out of the series 5,10, 17, 25 (a) 5 (b) 10 (c) 17 (d) 25 Ans : (d) [MTP Nov 18]
71.	In a certain language MADRAS is coded as NBESBT, how BOMBAY is coded in that language? (a) CPNCBX (b) CPNCBZ (c) CPOCBZ (d) CQOCBZ Ans : (c) [MTP Nov 18]
72.	Find the missing term of the number series 24, 60, 120, 210,? (a) 300 (b) 336 (c) 420 (d) 525 Ans. (b) [MTP May 19]
73.	GO = 32, SHE = 49, then SOME will be equal to (a) 56 (b) 58 (c) 62 (d) 64 Ans. (a) [MTP May 19]
74.	in a certain Code DECEMBER is written as ERMBCED. Which word will be written as ERMVENO in that code? (a) AUGUST (b) SEPTEMBER (c) OCTOBER (d) NOVEMBER Ans. (d) [MTP May 19]
75.	Find the missing term of the number series 48, 24, 96,48,192,? (a) 76 (b) 90 (c) 96 (d) 98 Ans. (c) [MTP May 19]
76.	Find the missing term of the series 17, 14, 15,

	12, 13, ?, ? (a) 10, 11 (b) 14, 11 (c) 11,13 (d) 12, 13 Ans: (a) [MTP Nov 19]
77.	Find out the odd man out of the series 5, 27, 61, 122, 213, 340, 509 (a) 27 (b) 61 (c) 122 (d) 509 Ans: (a) [MTP Nov 19]
78.	a_c_ba_ca_cb (a) abcc (b) acba (c) bcaa (d) bcba Ans: (d) [MTP Nov 19]
79.	In a certain language TWINKLE is written as SVHOJKD, then how would FILTERS be written in the same code? (a) EHKUDQR (b) ITNFKD (c) KVOHMF (d) TIMFKD Ans: (a) [MTP Nov 19]
80.	Find odd one out of the series 7, 9, 11, 12, 14, 15 (a) 15 (b) 14 (c) 9 (d) 7 Ans : (b) [MTP May 19]
81.	Find odd one out of the series 37, 45, 49, 65, 79 (a) 37 (b) 45 (c) 49 (d) 65 Ans : (c) [MTP May 19]
82.	Find the missing number of the series 22, 24, 28, ? , 52, 84 (a) 36

	(b) 38 (c) 42 (d) 46 Ans : (a) [MTP May 19]
83.	Find the missing number of series 1, 5, 13, 25, 41, ? (a) 51 (b) 57 (c) 61 (d) 63 Ans : (c) [MTP May 19]
84.	If SUMMER is coded as RUNNER the code for WINTER will be (a) SUITER (b) VIOUER (c) WALKER (d) SUFFER Ans : (b) [MTP May 19, Nov 22]
85.	In a certain code KAVERI is written as VAKIRE. How is MYSORE written in that code? (a) EROSYM (b) SYMORE (c) SMYERP (d) SYMERO Ans : (a) [MTP May 19]
86.	Find the wrong term of the series 121, 143, 165, 186, 209 (a) 143 (b) 165 (c) 186 (d) 209 Ans : (c) [MTP May 20, MTP Jan 25]
87.	Find missing term 7, 26, 63, 124, 215, 342? (a) 391 (b) 421 (c) 481 (d) 511 Ans : (d) [MTP May 20, Nov 22, MTP Jan 25]
88.	Find odd man out of the series 145, 197, 257, 325, 399 (a) 145 (b) 399 (c) 257 (d) 325

	Ans : (b) [MTP May 20, MTP Jan 25]
89.	Find missing term of the alphabet series ABD, DGK, HMS, MTB, SBL, ? (a) XKW (b) ZAB (c) ZKU (d) ZKW Ans : (d) [MTP May 20, MTP July 24, Jan 25]
90.	In a certain language, FLOWER is coded UOLDVI, then how is TERMINAL coded in that language? (a) FLKPMROZ (b) GVINRMZO (c) RVNIGLKA (d) MNIVGYEO Ans : (b) [MTP May 20, MTP Jan 25]
91.	Find next number in the following series 7, 11, 13, 17, 19, 23, 25, 29? (a) 30 (b) 31 (c) 32 (d) 33 Ans : (b) [MTP Nov 20, May 21]
92.	Find odd man out of the following series 41, 43, 47, 53, 61, 71, 73, 81 (a) 41 (b) 47 (c) 61 (d) 81 Ans : (d) [MTP Nov 20]
93.	If PLAY is coded as 8123 and RHYME is coded as 49367. What will be code of MALE? (a) 6217 (b) 6198 (c) 6395 (d) 6285 Ans : (a) [MTP Nov 20, Nov 23]
94.	Find the alphabet missing series ac_cab_baca_aaa_aba (a) aabc (b) aacb (c) babb (d) bcbb Ans : (a)

	[MTP Nov 20]
95.	In a certain code, TELEPHONE is written as ENOHPELET. How is ALIGATOR written (a) ROTAGILA (b) ROTAGAIL (c) ROTAGILE (d) ROTEGLA Ans : A [MTP Jan 25, May 22]
96.	If 'MEAT' is written as 'TEAM', then 'BALE' is written as (a) ELAB (b) EABL (c) EBLA (d) EALB Ans: (d) [MTP Nov 19]
97.	Find the missing term of the series 27,32,30,35, 33, ? (a) 28 (b) 31 (c) 36 (d) 38 Ans : (d) [MTP May 21]
98.	Find out the letter series AZY, EXW, IVU, ? (a) MTS (b) MQR (c) NRQ (d) LST Ans : (a) [MTP May 21]
99.	Find wrong number of the series 22,37, 52,67, 84, 97 (a) 52 (b) 84 (c) 97 (d) 67 Ans : (b) [MTP May 21]
100	If TWENTY is written as 863985 and ELEVEN is written as 323039 , then TWELVE can be coded (a) 863203 (b) 863302 (c) 863320 (d) 683302 Ans : (a) [MTP May 21, Nov 23]
101.	If B = 2 and BAG = 10, then BOX = ? (a) 36

	(b) 39 (c) 41 (d) 52 Ans : (c) [MTP May 21]
102	Find odd man out of the following series 15, 21, 63, 81, 69 (a) 15 (b) 21 (c) 63 (d) 81 Ans: (d) [MTP May 21]
103	Which of the following is odd one (a) CEHL (b) KMPT (c) OQTX (d) NPSV Ans: (d) [MTP May 21]
104	Find next term of the series 3,10,29,66, 127,? (a) 164 (b) 187 (c) 216 (d) 218 Ans : (d) [MTP Nov 21]
105	Which number should come next 7, 26,63,124,215, 342,? (a) 391 (b) 421 (c) 481 (d) 511 Ans : (d) [MTP Nov 21]
106	Find out the wrong number. 10,14,28,32,64,68,132 (a) 28 (b) 32 (c) 64 (d) 132 Ans : (d) [MTP Nov 21]
107	In a certain code 'SOUTHERN' is written as 'UVPTMQDG'. How is 'MARIGOLD' written in that code? (a) JSBCNFKS (b) JSBNHPME (c) JSBNCKNF (d) NBSKCJNF Ans : (c)

	[MTP Nov 21]
108.	In a certain code 'PRISM' is written as 'OSHTL' and 'RUBLE' is written as 'QVAMD'. How will 'WHORL' be written in that code? (a) XISPM (b) VINSK (c) UINSK (d) XGPQM Ans : (b) [MTP Nov 21]
109.	Find out the next term of the series 4, 25, 121, 289, ____ (a) 529 (b) 441 (c) 625 (d) None of the above Ans : (a) [MTP Nov 21]
110.	Which number should come next → 7, 13, 13, 14, 19, 15 ? (a) 15 (b) 25 (c) 19 (d) None of the above Ans : (b) [MTP Nov 21]
111.	Find out the wrong number. 2,10,18,54,162,486,1458 (a) 18 (b) 10 (c) 54 (d) 162 Ans : (b) [MTP Nov 21, RTP Jan 25]
112.	In a certain code, "Delhi is capital" is coded as "7 5 9", capital are beautiful is coded as "3 6 9", Delhi is beautiful is coded as "6 7 5", Patna also capital is coded as "9 2 4". What is code for beautiful ? (a) 2 (b) 4 (c) 6 (d) 9 Ans : (c) [MTP Nov 21, RTP Jan 25]
113.	If 'SYSTEM' is coded as 131625 then 'TERMS' will be coded as ? (a) 62251 (b) 62451 (c) 64251

	(d) 62415 Ans : (b) [MTP Nov 21]
114.	The missing term of the series 11, 10, __, 27, 66.5, 198.5 (a) 14 (b) 16 (c) 21 (d) 19 Ans : (a) [MTP May 22]
115.	What comes at last place in R, U, X, A, D, ? (a) E (b) F (c) G (d) H Ans : (c) [MTP May 22]
116.	If Z = 52 and ACT = 48, then BAT will be equal to (a) 39 (b) 41 (c) 44 (d) 46 Ans : (d) [MTP May 22, RTP Sep 24]
117.	If ROSE is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for SEARCH? (a) 246173 (b) 214673 (c) 214763 (d) 216473 Ans : (b) [MTP May 22, RTP Sep 24]
118.	If E = 5 and READ is coded as 7, then what is the code of 'DEAR' ? (a) 6 (b) 7 (c) 8 (d) 9 Ans : (b) [MTP May 22]
119.	Find missing term of the series 2, 3, 3, 5, 10, 13, ?, 43, 172, 177 (a) 23 (b) 38 (c) 39 (d) 40 Ans : 3

	[MTP May 22]
120	Find wrong number of the series 1,5,5,9,7,11,11,15,12,17 (a) 11 (b) 12 (c) 17 (d) 15 Ans : (b) [MTP May 22]
121	Find missing term of the letter series A, CD, GHI, UVWXY (a) LMNO (b) MNO (c) MNOP (d) NOPQ Ans : 3 [MTP May 22]
122	In a certain Code, 'CLOUD' is written as 'GTRKF'. How is 'SIGHT' written in that code? (a) UGHHT (b) UHJFW (c) WFJGV (d) WGJHV Ans : 4 [MTP May 22]
123	Find the missing term in each of the following series : 6, 13, 25, 51, 101? (a) 201 (b) 202 (c) 203 (d) 205 Ans : (c) [MTP Nov 22]
124	In a certain code, TEACHER is written as VGCEJGT, How is CHILDREN written in that code? (a) EJKNEGTP (b) EGKNEITP (c) EJKNFGTO (d) EJKNFTGP Ans : (d) [MTP Nov 22, Dec 24, April 24, July 24]
125	In a certain code language, '253' means 'books are old'; '546' means 'man is old' and '378' means 'buy good books'. What stands for 'are' in that code? (a) 2 (b) 4 (c) 5 (d) 6 Ans : (a)

	[MTP1 Nov 22, MTP 2 Nov 22]
126	Find the missing term of the following series : 3, 15, ?, 63, 99, 143 (a) 27 (b) 35 (c) 45 (d) 56 Ans : (b) [MTP Nov 22]
127	Find the missing term of the following series : 3, 7, 15, ?, 63, 127 (a) 30 (b) 31 (c) 47 (d) 52 Ans : (b) [MTP Nov 22]
128	Find odd man out of the following series 3, 4, 10, 32, 136, 685, 4116 (a) 10 (b) 32 (c) 136 (d) 4116 Ans : (b) [MTP Nov 22]
129	If GOODNESS is coded as HNPCODTR, then how GREATNESS can be written in that code? a. HQZSMFRT b. HQFZUFRTM c. HQFZUODTR d. HQFZUMFRT Ans : D [MTP April 23]
130	In certain code language, if TOUR, is written as 1234, CLEAR is written 5678 and SPARE is written as 90847, Find the code for TEARS? (a) 17847 (b) 14847 (c) 15247 (d) 17849 Ans : D [MTP April 23]
131	If ROSE 'is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for RESEARCH? (a) 61246173 (b) 61214673 (c) 61216473 (d) 61214743 Ans : B [MTP April 23]

132	Find the next alphabet series in the given sequence? ALN, DNR, GPR? a. KLN b. JRT c. RNU d. RNV Ans : B [MTP April 23]
133	Find the missing number in the following series? 2, 15, 10, 17, 26? a. 49 b. 47 (c) 37 (d) 36 Ans : C [MTP April 23]
134	Find the odd man out: 34, 105, 424, 2125, 12755. (a) 12755 (b) 2125 (c) 424 (d) 34 Ans : A [MTP April 23]
135	Find next term of the series 10, 69, 236, 595,? (a) 1254 (b) 1020 (c) 1320 (d) 1200 Answer(a) [MTP May 23]
136	In certain code language, BOARD is coded as CQDVI, what is the code for the word CONSULTING? (a) DQQWZRARNQ (b) DQQWZARQWQ (c) DQQWZRAQWQ (d) None of these Answer(c) [MTP May 23]
137	In a certain code language if CAMP is written as 9, then in the same code how will the word TEAM be written? (a) 14 (b) 19 (c) 27 (d) 33 Answer(c) [MTP May 23]
138	Which number will come next in the following

	series? 675, 623, 573, 525? (a) 491 (b) 479 (c) 423 (d) 456 Answer(b) [MTP May 23]
139	Identify the sequence of letters and find out the missing number. AGM, DJP, HNT, (a) MSY (b) NTZ (c) LRX (d) KQW Answer(a) [MTP May 23]
140	105, 115.5, 150, 162.5, 203,? (a) 217 (b) 217.5 (c) 210.5 (d) None of these Answer(b) [MTP May 23]
141	Find next number of the series 7, 23, 47, 79, 119, 167, ? (a) 211 (b) 223 (c) 287 (d) 319 Ans : B [MTP May 23]
142	Find odd man out: 34, 105, 424, 2123, 12756. (a) 12756 (b) 2123 (c) 424 (d) 34 Ans : B [MTP Nov 23]
143	Find next term of the series A5A, C10C, E15E, G20G (a) I25I (b) I20I (c) J25J (d) K20K Ans : A [MTP Nov 23]
144	Find next term of the letter series QPO, NML, KJI, HGF, (a) EDC (b) HGE (c) CAB

	(d) GHI Ans : A [MTP Nov 23]
145	Find the missing term 9, 27, 31, 155, 161, 1127, ? (a) 316 (b) 1135 (c) 1288 (d) 2254 Ans : B [MTP Dec 23]
146	Find the missing term 5760, 960, ?, 48, 16, 8 (a) 120 (b) 160 (c) 192 (d) 240 Ans : C [MTP Dec 23]
147	If, in a code, MIND becomes KGLB and ARGUE becomes YPESC, then what will DIAGRAM be in that code? (a) BGYEPYK (b) BGYPYEK (c) GLPEYKB (d) LKBGYPK Ans : A [MTP Dec 23, RTP Jan 25]
148	If A = 2, M = 26, Z = 52, then BET = ? (a) 44 (b) 54 (c) 64 (d) 72 Ans : B [MTP Dec 23]
149	If 'sky' is 'star', 'star' is 'cloud', 'cloud' is 'earth', 'earth' is 'tree' and 'tree' is 'book'. Then where do the birds fly? (a) Cloud (b) Sky (c) Star (d) Data inadequate Ans : C [MTP Dec 23]
150	Find next term of the series, 4, 9, 16, 25, 36, 49, ? (a) 1 (b) 9 (c) 20 (d) 64 Ans : (d) [MTP June 24]

151.	Find odd man out of the following: (a) 295 (b) 381 (c) 552 (d) 729 Ans: (d) [MTP Dec 23]
152	If HEALTH is written as GSKZDG, then how will NORTH be written in that code? (a) OPSUI (b) MNQSG (c) FRPML (d) IUSPO Ans : (b) [MTP Dec 24, April 24]
153	If HONEY is coded as JQPGA, which word is code as VCTIGVU ? (a) CARPETS (b) TRAPETS (c) TARGETS (d) UMBRELU Ans: (c) [MTP Dec 23]
154	If MACHINE is coded as 19 - 7 - 9 - 14 - 15 - 20 - 11, how will you code DANGER? (a) 11-7-20-16-11-24 (b) 13-7-20-9-11-25 (c) 10-7-20-13-11-24 (d) 13-7-20-10-11-25 Ans : (b) [MTP April 24]
155	Find odd man out of the following: (a) 15 (b) 25 (c) 37 (d) 49 Ans : (c) [MTP April 24]
156	Find the missing value in the series: 51, 52, 60, 87, 151, __, 492. (a) 195 (b) 276 (c) 317 (d) 420 Ans : (b) [MTP July 24]
157	In a certain code INACTIVE is written as VITCANIE, how is COMPUTER written in the same code (a) PMOCRETU (b) ETUPMOCR

	(c) UTEPMOOR (d) MOCPETUR Ans : (b) [MTP July 24]
158	Choose the odd numerical pair group (a) 34-43 (b) 55-62 (c) 62-71 (d) 83-92 Ans : (b) [MTP July 24]
159	If 'GOAL' is coded as 'HPBM' and 'FROCK' is coded as 'GSPTL' then how will 'LOFAR' be coded? (a) MP6ZO (b) MNEBS (c) MPGBS (d) MPEBR Ans : (c) [MTP May 24]
160	Find the missing term in each of the following series: 28, 33, 31, 36, 34? (a) 48 (b) 39 (c) 54 (d) 62 Ans: (b) [MTP Sep 24]
161	In certain code language 'CLOCK' is coded as 75276 and 'EARTH' is coded as 83491, then 'COAT' is coded as (a) 7329 (b) 7239 (c) 7932 (d) 7529 Ans: (b) [RTP May 25]
162	Find the missing term of series 2, 7, 16, 29...., 67, 92 (a) 39 (b) 46 (c) 43 (d) 62 Ans: (b) [RTP May 25]
163	In a certain language 'MENTION' is written as

	'NFOUJPO', the code of 'MYSTIFY' is: (a) NZTUJ6Z (b) NFOFTJT (c) LNEITNO (d) OERESTIN Ans: (a) [RTP May 25]
164	In the following letter-series some letters are missing. The missing letters are given in the proper sequence as one of the alternatives. Find the correct alternative. ab—abca—abc—bca—c a. abac b. bcac c. ccab d. bbac Ans : (c) [MTP May 24]
165	In the following series, which number will replace the question mark: 23, 29, 31, 37, 41, 43, ? (a) 45 (b) 53 (c) 47 (d) 49 Ans : (c) [MTP May 24]
166	If in a certain code '493' means 'Friendship difficult challenge', '961', means, 'Struggle difficult Exam.', and '178' means 'Exam believable subject', then which digit is used for 'believable'? a. 7 or 8 b. 7 or 9 c. 8 d. 8 or 1 Ans : (a) [MTP May 24]
167	If 'INSURE' is coded as 951395, then how will 'PATRIOT' be coded? a. 7126299 b. 7129926 c. 7129962 d. 7129692 Ans : (c) [MTP may 24]

Chapter 10 : Direction Sense Test

1.	Mohan starts from point A and walks 1 km towards south, turns left and walks 1 km. Then he turns left again and walks 1 km.. Now he is facing (a) East (b) West (c) North (d) South West Ans: (c) [SM, MTP May 18, Nov 18, June 24]
2.	Suresh starts from a point ,walks 2 miles towards south , turns and walks $1\frac{1}{2}$ miles, turns left and walks $\frac{1}{2}$ miles and then he turns back .What is the direction he is facing now (a) East (b) West (c) South (d) North Ans: (d)
3.	Aman starts from a point, walks 4 miles towards north and turns left and walk 6 miles, turns right and walks for 3 miles and again turns right and walks 4 miles and takes rest for 30 minutes .He gets up and walks straight 2 miles in the same direction and turn right and walk one mile. What is the direction he is facing (a) North (b) South (c) South-East (d) West Ans: (b)
4.	Arun started from point A and walked 10 KM East to point B, then turned to North and walked 3 KM to point C and then turned West and walked 12 KM to point D , then again turned south and walked 3 KM to point E. In which direction is he from his start point (a) East (b) South (c) West (d) North Ans: (c)

	[SM, MTP Nov 18]
5.	A starts from a point and walk 5 KM north, then left and walks 3 KM .Then again turns left and walks 5 KM. Point out the direction in which he is going now (a) North (b) South (c) East (d) North Ans : (b)
6.	A rat run 20 KM towards East and turns to right runs 10 KM sand turns to right runs 9kms and again turns to left runs 5 KM sand then turns to left runs 12 KM sand finally turns to left and runs 6 KM . Now what direction is rat (a) East (b) North (c) West (d) South Ans : (b) [SM, MTP Nov 18]
7.	A driver left his village and drove North for 20 km.s, after which he stopped for breakfast. Then he turned left and drove another 30 km.s, when he stopped for lunch. After some rest, he again turned left and drove 20 km.s before stopping for evening tea. Once more he turned left and drove 30 km.s to reach the town where he had supper. After evening tea in which direction did he drive? (a) West (b) East (c) North (d) South Ans : (b) [SM, MTP May 19]
8.	A man is facing East, then he turns left and goes 10 m., then turns right and goes 5 meters then goes 5 meters to the South and from there 5 meters to West. In which direction is he from his original place? (a) East (b) West (c) North (d) South

	Ans : (c) [SM, MTP1 May 19, MTP2 May 19, Nov 18, MTP Dec 23]
9.	From. her home Prerna wishes to go to school. From. home she goes towards North and then turns left and then turns right, and finally she turns left and reaches school. In which direction her school is situated with respect to her home? (a) North East (b) North West (c) South East (d) South West Ans : (b) [SM, MTP May 19]
10.	A child walks 25 feet towards North, turns right and walks 40 feet, turns right again and walks 45 feet. He then turns left and walks 20 feet. He turns left again walks 20 feet. Finally, he turns to his left to walks another 20 feet. In which direction is the child from. his starting point? (a) North (b) South (c) West (d) East Ans : (d) [SM, MTP May 19]
11.	Raju facing North and moves 20 kms, then he turned to his right and moves 20 kms and then he moves 10 kms in North-East, then he turned to his right and moves 20 kms and then he turned to his right and moves 20 kms and again he turned to his left and moves 20 kms. Now in which direction Raju is facing? (a) South East (b) North East (c) South West (d) North West Ans : (a)
12.	K is a place which is located 2 kms away in the north-west direction from. the capital P. R is another place that is located 2 kms away in the south-west direction from. K. M is another place and that is located 2 kms away in the north-west direction from. R. T is yet another place that is located 2 kms away in the south-west direction from. M. In which direction is T located in relation to P (a) South West

	(b) North West (c) West (d) North Ans : (c)
13.	Babu is Rahim's neighbour and his house is 200 meters away in the north-west direction. Joseph is Rahim's neighbour and his house is located 200 meter away in the south-west direction. Gopal is Joseph's neighbour and he stays 200 meters away in the south-east direction. Roy is Gopal's neighbour and his house is located 200 meters away in the north-east direction. Then where is the position of Roys' house in relation to Babu's ? (a) South East (b) South West (c) North (d) North East Ans : (a)
14.	A tourist drives 10 km. towards west and turns to left and takes a drive of another 4 km.. He then drives towards east another 4 km. and then turns to his right and drives 5 km. . Afterwards he turns to his left and travels 6 km.. In which direction is he from the starting point? (a) North (b) East (c) West (d) South Ans: (d)
15.	A man started walking West. He turned right, then right again and finally turned left. Towards which direction was he walking now (a) North (b) South (c) West (d) East Ans: (a)
16.	One evening, Raja started to walk toward the Sun. After walking a while, he turned to his right and again to his right. After walking a while, he again turned right. In which direction is he facing? (a) South (b) East (c) West (d) North Ans : (d)
17.	Five boys A, B, C, D and E are deing in a park

	in a circle. A is facing South-West, D is facing South-East, B and E are right opposite A and D respectively and C is equidistant between D and B. Which direction is C facing? (a) West (b) South (c) North (d) East Ans : (d)
18.	If a man on a moped starts from a point and rides 4 kms South then turns left and rides 2 kms and turn again to the right to ride to go more towards which direction is he moving (a) North (b) West (c) East (d) South Ans: (d) [SM, MTP Nov 20]
19.	A man starts from a point, walk 8 kms towards North, turns right and walks 12 kms, turns left and walks 7 km turns and walks 20 kms towards South, turns right and walks 12 kms. In which direction is he from the starting point? (a) North (b) South (c) West (d) East Ans : (b)
20.	Daily in the morning the shadow of Gol Gumbaz falls on Bara Kaman and in the evening the shadow of Bara Kaman falls on Gol Gumbaz exactly. So in which direction is Gol Gumbaz to Bara Kaman? (a) Eastern side (b) Western side (c) Northern side (d) Southern side Ans : (a)
21.	Ashok went 8 kms South and turned West and walked 3 kms again he turned North and walked 5 kms. He took a final turn to East and walked 3 kms. In which direction was Ashok from the starting point? (a) East (b) North (c) West (d) South Ans: (d)
22.	If X stands on his head with his face towards

	south, to which direction will his left hand point? (a) East (b) West (c) North (d) South Ans: (b)
23.	I drove East for 5 miles then drove North 3 miles, then turned to my left and drove for 2 miles and again turned to my left. Which direction am I going now? (a) South (b) North (c) West (d) North West Ans: (a)
24.	If A stands on his head with his face towards north. In which direction will his left hand point? (a) North East (b) North (c) East (d) North West Ans : (c)
25.	A car travelling from south covers a distance of 8 kms, then turns right and runs another 9 kms and again turns to the right and was stopped. Which direction does it face now? (a) South (b) North (c) West (d) East Ans: (a) [SM, MTP May 18, June 24]
26.	A taxi driver commenced his journey from a point and drove 10 kms toward north and turned to his left and drove another 5 kms. After waiting to meet a friend here, he turned to his right and continued to drive another 10 km. He has covered a distance of 25 kms so far, but in which direction would he be now? (a) South (b) North (c) East (d) South East Ans : (b)
27.	A walks 3 kms northward and then he turns left and goes 2 kms. He again turns left and goes 3 kms. He turns right and walks straight. In which direction is he walking now

	(a) East (b) West (c) North (d) South Ans : (b)
28.	A walks southeards, then turns right, then left and then right. In which direction is he from the starting point? (a) South (b) East (c) West (d) North Ans : (a)
29.	A man starts from a point, walks 15 metres towards East, turns left and walks 10 metres, right again and walks. Towards which direction is he now waking (a) North (b) East (c) West (d) South Ans : (b)
30.	A boy starts walking towards west, after a while walking he turns right and after walking for 20 minutes. Towards which direction he is walking now? (a) West (b) North (c) South (d) East Ans : (b)
31.	I stand with my right hand extended side-ways towards South. Towards which direction will his back be (a) North (b) West (c) East (d) South Ans : (b)
[SM, MTP Nov 18, May 21]	
32.	If a person moves 4 kms towards west, then turns right and moves 3 kms and then turns right and moves 6 kms, which is the directions in which he is now moving ? (a) East (b) West (c) North (d) South Ans: (a)
33.	If Mohan sees the rising sun behind the

	temple and the setting sun behind the railway station from his house, what is the direction of the temple from the railway station? (a) South (b) North (c) East (d) West Ans : (c)
34.	Laxman went 15 kms to North then he turned West and covered 10 kms. Then he turned south and covered 5 kms. Finally turning to East he covered 10 kms. In which direction he is from his house (a) East (b) West (c) North (d) South Ans : (c)
35.	A man starts from a point, walks 4 miles North, turns to his right and walks 2 miles, again turns to his right and walks 2 miles, again turns to his right and walks 2 miles. In which direction would he be now from. into starting point (a) North (b) South (c) East (d) West Ans: (a)
36.	I started walking down a road in the morning facing the Sun. After walking for sometime I turned to my left. Then I turned to my right. In which direction was I going then (a) East (b) West (c) North (d) South Ans: (a)
37.	Lakshmi walked 2 kms north from. her house and took a turn to left and continued to walk another one kilometre and direction is she facing now (a) West (b) North (c) South (d) North Ans: (c)
38.	You are going straight, first eastwards, then turn to the right, then right again, then left. In which direction would you be going now

	(a) East (b) West (c) South (d) South Ans: (c)
39.	If Ahmed travels towards North from his house, then to left, then to South covering equal distances in each direction to reach Sohan's house, in which direction is Ahmed's house now (a) East (b) South (c) North (d) West Ans: (a)
40.	Raja comes towards North, turn right, then right again and then go to the left. In which direction is Raja now? (a) South (b) East (c) West (d) North Ans: (b)
41.	Roopa starts from a point and walks 15 metres towards west, turns left and walks 12 metres, turns right again and walks. What is the direction she is now facing (a) South (b) West (c) East (d) North Ans: (b) [SM, MTP May 18, June 24]
42.	A man starts his journey facing the sun early morning. He then turns right and walks 2 km.s. He then walks 3 km.s after turning right again. Which is the direction he is facing now (a) North East (b) North (c) West (d) South Ans: (c)
43.	Roy walks 2 km.s to East, then turns North-West and walks 3 km.s. Then he turns South and walks 5 km.s. Then again he turns West and walks 2 km.s. Finally he turns North and walks 6 km.s. In which direction, is he from the starting point (a) South West (b) South East

	(c) North West (d) North East Ans: (c)
44.	Seeta starts from a point, walks 2 km.s towards north, turns towards her right and walks 2 km.s, turns right again and walks. What is the direction she is facing now (a) East (b) West (c) South (d) North Ans: (c)
45.	Shyam was facing East. He walked 5 kms forward and then after turning to his right walked 3 kms. Again he turned to his right and walked 4 km. After this he turned back. Which direction was he facing at that time? (a) East (b) West (c) North (d) South Ans: (a)
46.	Raju is standing facing north. He goes 30 metres ahead and turns left and goes for 15 metres. Now he turns right and goes for 50 metres and finally turns to his right and walks. In which direction is he heading? (a) North (b) East (c) South (d) West Ans: (b)
47.	Sanmitra starts from his house and walks 3 kms towards north. Then he turns right and walks 2 kms and then turns right and walks 5 kms, then turns right and walks (a) North (b) South (c) West (d) East Ans: (a)
48.	Raju is Ramu's neighbour and he stays 100 metres away towards southeast. Venu is Raju's neighbour and he stays 100 metres away towards southwest. Khader is Venu's neighbour and he stays 100 metres away towards, north-west. Then where is the position of Khader's home in relation to Ramu's? (a) South East (b) South West

	(c) North West (d) East Ans: (b)
49.	Ramesh walks 3 kms, towards West and turned to his left and walked 2 kms. He, then walked 3 kms. Finally, he turned to his right again and walked direction is Ramesh from his starting point now? (a) East (b) West (c) North (d) South Ans: (b)
50.	Deepa starts walking north towards and after a while she turns to her right. After walking some distance, she turns to his left and walks a distance of 1 km. She then urns to her left again. In which direction she moving now (a) North (b) West (c) East (d) South Ans : (b)
51.	Raman starts walking in the morning facing the Sun. After sometime, he turned to the left later again he turned to his left. At what direction is Raman moving now? (a) East (b) West (c) South (d) North Ans: (b)
52.	Kamal starts walking towards North, then turns left and cover some distance, then he turns towards right and walks. After some time he turns to his right and then turns left. In which direction Kamal is walking now (a) East (b) South (c) North (d) South East Ans: (c)
53.	X walks southwards and then turns right, then left and then right,. In which direction is he moving now? (a) South (b) North (c) West (d) South West

	Ans: (c)
54.	A man started to walk East. After moving a distance, he turned to his right. After moving a distance , he turned to his right again. After moving a little he turned in the end to his left. In which direction was he going now (a) North (b) South (c) East (d) West Ans: (b)
55.	A man is facing towards East and turns through 45° clockwise again 180° clock wise and then turns through 270° anti-clock wise. In which direction is he facing now? (a) West (b) North- East (c) South (d) South-West Ans : B [MTP Jan 25, May 20]
56.	Facing towards North, Ravi walks 35 m. He then turns left and walks 55 m. He again turns left and walks 35 m. How far is from original position and towards which direction. (a) 30 m, North (b) 20 m, East (c) 55 m, West (d) 20 m, South Ans : C [MTP Jan 25, May 20]
57.	Ram start moving from a point, facing in East direction. After walking 15 m, he turned to his left and walked 25m, before turning to his right. Then, he walked a distance of 35 m, then turned to his right and stop after walking further a distance of 25 m. Find how far Ram is from his starting point. (a) 20 m (b) 50 m (c) 15 m (d) 25 m Ans : B [MTP Jan 25, May 20]
58.	Ramu walks 5 Kms starting from his house towards west then turns right and walks 3 km. Thereafter he takes left turn and walks 2 km. Further, he turn left and walks 3 km. Finally, he turns right and walks 3 kms. In

	what direction he is now from his house (a) West (b) North (c) South (d) North Ans. (a) [MTP May 19]
59.	A man starts for his office in the North direction, he turns to his left, and then to his right and again to his right. In which direction he will be facing? (a) North (b) South (c) East (d) North Ans: (c) [MTP Nov 19]
60.	Pramila is going towards East. She turns left, moves on same distance and again turns to her left. After walking some distance, she turns to her right and moves on. In which direction she is going now? (a) North (b) South (c) North-West (d) West Ans: (a) [MTP Nov 19]
61.	Town D is 12 km towards the North of A. Town C is 15 km towards the West of town D. Town B is 15 km towards the west of town A, how far and which direction is town B from town C ? (a) 15 Km towards North (b) 12 Km towards North (c) 3 km towards South (d) 12 km towards South Ans: (d) [MTP Nov 19]
62.	Rajiv walks 10 m South from his house, turns left and walks 25 m, again turns left and walks 40 m, then turns right and walks 5 m to reach the college. In which direction is the college from his house (a) North (b) South-West (c) North-East (d) East

	Ans: (c) [MTP Nov 19]
63.	45. If East is replaced by South-East, then West will be replaced by which replaced by which of the following directions? (a) North-East (b) North (c) East (d) North- West Ans : (d) [MTP Nov 20]
64.	If a man on motor bike starts from a point and rides 4 km South then turns left and rides 2 km and turn again to the right to ride in which direction is he moving? (a) North (b) West (c) South (d) North Ans : (c) [MTP Nov 20, May 21]
65.	Hema walks 30 km North. Then, she turns right and walks 30 m then she turns right and walks 55 m. Then she turns left and walks 20 m. Then she again turns left and walks 25 m. How many meters away is she from her original position (a) 45 m (b) 50 m (c) 66 m (d) 55 m Ans : (b) [MTP Nov 20]
66.	A man stands on a point and starts walking towards north then turns left then turns right and then left in which direction he is moving. (a) West (b) North (c) East (d) South Ans : (a) [MTP May 21]
67.	One evening before sunset, two friends Ravi and Raj were talking to each other face to face. If Ravi's shadow was exactly to his left side, which direction was Raj facing ?

	(a) West (b) East (c) North (d) South Ans : (c) [MTP May 21]
68.	If South-West becomes North, then what will be the North-East be ? (a) North (b) South-East (c) South (d) East Ans : (c) [MTP May 21, Nov 22]
69.	Ramu moved a distance of 75 meters towards North. He then turned to left and walking for about 25 m, turned left again and walks 80m. Finally, he turned to the right at an angle of 45° . In which direction was he moving finally? (a) South-East (b) South-West (c) North-West (d) North- East Ans: (b) [MTP May 21, Dec 24]
70.	Kiran walks 2 km towards North then he turns East and walks 10 km. After this he turns North and walks 3 km .Again he turns towards East and walks 2 km. How far from the starting point? (a) 10 km (b) 13km (c) 15 km (d) 17 km Ans: (b) [MTP May 21]
71.	Raju walks northwards. After a while, he turns to his right and a little further to his left. Finally, after walking a distance of one kilometre, he turns to his left again. In which direction is he moving now? (a) North (b) South (c) East (d) West Ans : (d) [MTP Nov 21]
72.	Ravi wants to go to the College. He starts from his home, which is in the East and comes to a crossing. The road to the left

	ends in a theatre, straight ahead is the hospital. In which direction is the College? (a) North (b) South (c) East (d) West Ans : (a) [MTP Nov 21]
73.	A man is facing south. He turns 135° in the anticlockwise direction and then 180° in the clockwise direction. Which direction is he facing now? (a) North-East (b) North-West (c) South-East (d) South-West Ans : (d) [MTP Nov 21]
74.	Rakesh moves towards South-East a distance of 7 m, then he moves towards West and travels a distance of 14 m. From here he moves towards North-West a distance of 7 m and finally he moves a distance of 4 m towards East and stood at that point. How far is the starting point from where he stood? (a) 3m (b) 4m (c) 10m (d) 11m Ans : (c) [MTP Nov 21]
75.	A and B start moving towards each other from two places 200 m apart. After walked 60 m, B turns left and goes 20 m, then he turns right and goes 40 m. He then turns right again and comes back to the road on which he had started walking. If A and B walk with the same speed, what is the distance between them now? (a) 20m (b) 30m (c) 40m (d) 50m Ans : (c) [MTP Nov 21]
76.	When a person faces north and walks 25 m right, and he turns left and walks 20 m and again he turns right 25 m and turns right and walks 40 m in which direction is he now from

	his starting point (a) North-West (b) North -East (c) South- East (d) South-West Ans : (c) [MTP Nov 21]
77.	Sanjay started from his house towards west. After a walking a distance 15 km he turned to the right and walked 10 km, he again turned to the right and walked 5 km. After this he turns left at 135° and covered 10 km in which direction should he is going? (a) South (b) South-West (c) South- East (d) North -West Ans : (d) [MTP Nov 21, Nov 23, RTP Jan 25]
78.	Raju Walked from A to B in the east 10 m, then he turns towards right and walked 3 m. Again, he turned to the right and walked 14 m. how far is from is she from point A? (a) 4 feet (b) 5 feet (c) 12 feet (d) 13 feet Ans : (b) [MTP Nov 21]
79.	Mamtha moved a distance of 75 m towards north, then she turns to the left and walked to about 25 m, turned left again and walks 80 m. Finally, she turns to the right at angle of 45°. In which direction was she is moving finally? (a) South-East (b) South-West (c) North-West (d) North-East Ans : (b) [MTP Nov 21]
80.	Kamal starts from point 'O' and moved towards North 2 km, then he turns right and moved 4 km again he turned towards North and walked up to 1 km reached at A. Find the distance between OA. (a) 6 (b) 7 (c) 4 (d) 5 Ans : (d)

	[MTP Nov 21]
81.	M is to the East of D, F is to the South of D and K is to the West of F. M is in which direction with respect to K? (a) South-West (b) North-West (c) North-East (d) South-East Ans : (c) [MTP May 22]
82.	A cyclist goes 30 km to North and then turning to goes 40 km. Again he turns to his right and goes 20 km. After this he turns to his right and goes 40 km. How far is the from his starting point? (a) 0 km. (b) 10 km. (c) 25 km. (d) 40 km. Ans : (b) [MTP May 22]
83.	A boy from his home, first walks 20 m in North-West direction then 20 m in South - West direction. Next, he walks 20m South - East direction. Finally, he turns towards his house. In which direction is he moving? (a) North - West (b) North-East (c) South - West (d) South - East Ans : (b) [MTP May 22]
84.	Raju leaves his house and walks 12 km towards North. He turns right and walks another 12 km. He turns right, walks 12 km more and turns left to walk 5 km. How far is he from his home and in which direction? (a) 7 km east (b) 10 km east (c) 17 km east (d) 24 km east Ans : (c) [MTP May 22, RTP Sep 24]
85.	A child goes 50 meter towards South and then turning to his right, he goes 50 meter. Then, turning to his left, he goes 30 meter. Again he turns to his left and goes 50 meter. How far is he from his initial position? (a) 30 m (b) 40 m (c) 50 m

	(d) 80 m Ans : (a) [MTP May 22]
86.	Raju starts walking straight towards East. After walking 75 metres, he turns to the left and walks 25 metres straight. Again, he turns to the left, walks a distance of 40 metres straight, again he turns to the left and walks a distance of 25 metres. How far is he from the starting point? (a) 25 meters (b) 50 meters (c) 115 meters (d) 35 meters Ans : 4 [MTP May 22]
87.	Ravi started from the house towards West. After walking a distance of 30 metres, he turned towards right and walked 20 metres. He then turned left and moving a distance of 10 metres, turned to his left again and walked 40 metres. He now turned to the left and walked 5 metres. Finally, he turned to his left. In which direction was he walking now? (a) North (b) South (c) East (d) South-West Ans: 1 [MTP May 22, July 24]
88.	I am facing South. I turn right and walk 20 meters. Then I turn right again and walk 10 meters. Then I turn left and walk 10 meters and then turning right walk 20 meters. Then I turn right again and walk 60 meters. Which direction am I facing now? (a) North (b) North-West (c) East (d) North-East Ans : 4 [MTP May 22]
89.	Going 50 m to the south of her house Radhika turns left and goes another 20 m. Then turning to the North, she goes 30 m and then starts walking to her house. In which direction is she walking now? (a) North-West (b) North (c) South-East

	(d) East Ans : 1 [MTP May 22]
90.	A man is facing west. He turns 45° in the clockwise direction and then another 180° in the same direction and then 270° in the anticlockwise direction. Which direction is he facing now? (a) South (b) North-West (c) West (d) South-West Ans : (d) [MTP May 22, Nov 22, April 24, Dec 23]
91.	From home Neha goes towards North for her college and then she turns left and then turns right, and finally she turns left and reaches college. In which direction her college is situated with respect to her home ? (a) South-West (b) North-East (c) North-West (d) South-East Ans : (c) [MTP Nov 22]
92.	Y is in the East of X which is in the North of Z. If P is in the South of Z, then in which direction of Y, is P? (a) North (b) South (c) South-East (d) South-West Ans : (d) [MTP Nov 22]
93.	Five villages P, Q, R, S, and T are situated close to each other. P is to the west of Q, R is to the south of P. T is to the north of Q and S is to the east of T. Then, R is in which direction with respect to S? (a) North-West (b) South-East (c) South-West (d) Data inadequate Ans : (c) [MTP Nov 22]
94.	In a clock at 12 : 30, hour needle is in North direction while minute needle is in South direction. In which direction would be minute needle at 12:45?

	(a) North-West (b) South-East (c) West (d) East Ans : (c) [MTP Nov 22]
95.	Neha walked 2 km west of her house and then turned south covering 4 km. Finally, she moved 3 km towards east and then again 1 km west. How far is she from her initial position? (a) 7 km (b) 3 km (c) 4 km (d) 12 km Ans : (c) [MTP Nov 22, April 24, Dec 23]
96.	Shweta moved a distance of 75 metres towards the north. She then turned to the left and walking for about 25 metres, turned left again and walked 80 metres. Finally, she turned to the right at an angle of 45° . In which direction was she moving finally? (a) South (b) South-West (c) North-East (d) North-West Ans : (b) [MTP Nov 22, April 24]
97.	Varun faces towards north. Turning to his right, he walks 25 metres. He then turns to his left and walks 30 metres. Next, he moves 25 metres to his right. He then turns to his right again and walks 55 metres. Finally he turns to the right and moves 40 metres. In which direction is he now from his starting point? (a) South-East (b) South-West (c) South (d) North-West Ans : (a) [MTP Nov 22]
98.	Ram moves towards South-East a distance of 7 km, then he moves towards West and travels a distance of 14 km. from there he moves towards North-West a distance of 7 km and finally he moves a distance of 4 km towards east. How far is he now from the starting point? (a) 3 km (b) 4 km

	(c) 10 km (d) 11 km Ans : C [MTP April 23]
99.	P, Q, R and S are playing a game of carom P, R and S, Q are partners, 'S' is to the right of 'R'. If 'R' is facing West, then 'Q' is facing which direction? (a) South (b) North (c) East (d) West Ans : B [MTP April 23]
100.	One morning a boy starts walking in a particular direction for 5 Km and then takes a left turn and walks another 5 Km. thereafter he again takes left turn and walks another 5 Km and at last he takes right turn and walks 5 Km. Now he sees his shadow in front of him. What direction he did start initially? (a) South (b) North (c) West (d) East Ans : C [MTP April 23]
101.	It is 3'o clock in a watch. If the minute hand points towards the North-East then the hour hand will point towards the (a) South (b) South - West (c) North- West (d) South - East Ans : D [MTP April 23]
102.	A man is facing west. He turns 450 in the clockwise direction and then another 1800 in the same direction and then 2700 in the anticlockwise direction. Find which direction he is facing now? (a) South-East (b) West (c) South (d) South-West Ans : A [MTP April 23]
103.	Shyam goes 5 km in the North from his school. Now, turning to the left, he goes to 10 km and again turns to left and goes to 5

	km. How far he is from his school and in which direction? (a) 10 km, South from school (b) 10 km, North from school (c) 10 km, West from school (d) 10 km, East from school Ans: (c) [MTP June 24]
104.	Rasik walked 20 m towards north. Then he turned right and walks 30 m. Then he turns right and walks 35 m. Then he turns left and walks 15 m. Finally, he turns left and walks 15 m. In which direction and how many metres is he from the starting position? (a) 15 m West (b) 30 m East (c) 30 m West (d) 45 m East [MTP June 24]
105.	Rahim started from point X and walked straight 5 km. East, then turned left and walked straight 2 km. and again turned left and walked straight 7 km. In which direction is he from the point X ? (a) North-East (b) South-West (c) South-East (d) North-West Ans : d [MTP Dec 24, April 24]
106.	Sangeeta leaves from her home. She first walk 30 metres in North-West direction, and then 30m in South West direction, next she walks 30 metres in South-East direction. Finally she turns towards her house. In which direction is she moving? (a) North-West (b) North-East (c) South-East (d) South-West Ans : B [MTP Dec 24, April 24]
107.	A person is facing towards North. He moves 70° clock-wise direction. Again he is moving 300° clock-wise direction. Now, in which direction is he presently facing ? (a) North-West (b) South-East (c) North-East (d) South-West

	Ans : c [MTP Dec 24]
108.	Namita walks 40 metres towards west. Namita walks 14 metres towards west, then turns to her right and walks 14 metres and then turns to her left and walks 10 metres. Again turning to her left she walks 14 metres. What is the shortest distance (in metres) between her starting point and the present position? (a) 38 (b) 28 (c) 10 (d) 24 Ans : (d) [MTP July 24]
109.	The door of Aditya's house faces the East. From the back side of his house, he walks straight 50 m, then turns to the right and walks 50 m again. Finally, he turns towards left and stops after walking 25 m. Now, Aditya is in which direction from the starting point? (a) South-East (b) North-East (c) South-West (d) North -East Ans : (d) [MTP July 24]
110.	Maya starts at point T, walks straight to point U which is 4 ft. away. She turns left, at 90° and walks to W which is 4 ft. away. turns 90° right and goes 3 ft. to P. turns 90° right and walks 1 ft. to Q, turns left at 90° and goes to V, which is 1 ft. away and once again turns 90° right and goes to R. 3 ft. away. What is the distance between T and R? (a) 4 feet (b) 5 feet (c) 7 feet (d) 8 feet Ans : (d) [MTP July 21]
111.	There are four towns P, Q, R and T. Q is to the South-west of P, R is to the east of Q and South-east of P and T is to the north of R in line with QP. In which direction of P is T located? (a) East (b) South-east

	(c) North (d) North-east Ans : (d) [MTP July 24]
112.	One day, Pranav took his car & commenced his journey from his home and drove 25 km towards north and turned to his left and drove another 12.5 km. After waiting to meet a friend Deepak, he turned to his right and continued to drive another 25 km. After covering a distance of 62.5 km till now, in which direction is he now? (a) North (b) East (c) South-east (d) South Ans : A [MTP Dec 23]
113.	After 3 pm on a Sunny day when Vicky was returning from his college, he saw that his uncle was coming from the opposite direction. His uncle talked to him for sometime. Vicky saw that the shadow of his uncle was to his right side. Which direction was his uncle facing during their talk ? (a) North (b) South (c) East (d) None Ans : A [MTP Dec 23]
114.	Point P is 10 m west of point Q. Point R is 4 m north of point P. Point T is 3 m east of point S and point S is 5 m south of point Q. What is the direction of point R with respect to point T? (a) South-east (b) South (c) North-east (d) North-west Ans : D [MTP Dec 23]
115.	If $A \times B$ means A is to the south of B; $A + B$ means A is to the north of B; $A \% B$ means A is to the east of B; $A - B$ means A is to the west of B; then in $P \% Q + R - S$, S is in which direction with respect to Q? (a) South -West (b) South- East (c) North-East (d) North-West

	Ans : B [MTP Nov 23, May 24]
116.	Hari in order to go to university started from his house in the east and came to a crossing. The road to the left ends in a theatre, straight ahead is the hospital. In which direction is the university? (a) North (b) South (c) East (d) West Ans : A [MTP Nov 23]
117.	Ravi left home and cycled 10 km towards South, then turned right and cycled 5 km and then again turned right and cycled 10 km. After this he turned left and cycled 10 km. How many kilometers will he have to cycle to reach his home straight? (a) 10 km (b) 15 km (c) 12 km (d) 17 km Ans : B [MTP Nov 23, July 24]
118.	The length and breadth of a room are 8 metre and 6 metre respectively. A cat runs along all four walls and finally along diagonal order to catch a rat. How much total distance covered by the cat? (a) 10 (b) 14 (c) 38 (d) 48 Ans : C [SM, MTP July 24]
119.	A man walks 5 km south and then turns to the right. After walking 3 km he turns to the left and walks 5 km. Now in which direction is he from the starting place? (a) East (b) South (c) North-East (d) South-West Answer(d) [MTP June 23]
120.	If South-East becomes North, North-East becomes West and so on. What will West become? (a) North-East (b) North-West

	(c) South-East (d) North-East Answer(c) [MTP June 23]
121.	One evening before sunset Rekha and Hema were talking to each other face to face. If Hema's shadow was exactly to the right of Hema, which direction was Rekha facing? (a) North (b) South (c) West (d) East Answer(b) [MTP June 23]
122.	Ram walks 30 km East then turns right and walks for another 16 km. He then again turns right and walks for another 16 km. He then turns left & walks for another 14 km. Then he turns right & walks for 14 km. How far is he from his initial point? (a) 26 km (b) 24 km (c) 22 km (d) None of these Answer(d) [MTP June 23]
123.	Anil started walking 5 kms towards north then he turned left and walked 3 kms. Again, he turned left and walked 5 kms. Then the total number of kms he walked is (a) 13 kms (b) 8 kms (c) 3 kms (d) 5 kms Ans: (a) [RTP May 25]
124.	Raju started walking 10 kms towards east from his home. He turned right and walked 5 kms to the south to reach his school. In which directions is his school from his home? (a) South - East (b) North - East (c) South - West (d) North - West Ans: (a) [RTP May 25]

125.	A man is facing north. He turns 45 degree in the clockwise direction and then another 180 degree in the same direction and then 45 degree in the anticlockwise direction. Find which direction he is facing now ? a. North b. East c. West d. South Ans : (d) [MTP May 24]
126.	26. P started from his house towards west. After walking a distance of 25 m. He turned to the right and walked 10 m. He then again turned to the right and walked 15 m. After this he is to turn right at 135° and to cover 30 m. In which direction should he go? a. West b. South c. South-West d. South-East Ans : (c) [MTP May 24]
127.	Each of these questions is based on the following information: P % Q means P is the father of Q. P @ Q means P is the sister of Q. P \$ Q means P is the brother of Q. P * Q means P is the wife of Q. In the expression F \$ D % K @ H * R, how is D related to R? a. Father b. Mother c. Sister d. Father in law Ans : (d) In the expression A % B @ K * H % P, how is B related to P? a. Aunt b. Cousin c. Uncle d. Daughter Ans : (a) [MTP May 24]

Chapter 11 : Seating Arrangements

1.	Five boys A, B, C, D and E are sitting in a row A is to the right of B and E is to the left of B but to the right of C. A is to the left of D. Who is second from the left end? (a) D (b) A (c) E (d) B Ans: (c) [SM, MTP1 May 21, MTP 2 May 21, Dec 24, April 24]
2.	There are five different houses, A to E, in a row. A is to the right of B and E is to the left of C and right of A, B is to the right of D. Which of the houses is in the middle? (a) A (b) B (c) C (d) D Answer :-a [SM, MTP May 18]
3.	Five friends P, Q, R, S and T are sitting in a row facing North. Here, S is between T and Q and Q is to the immediate left of R. P is to the immediate left of T. Who is in the middle? (a) S (b) T (c) Q (d) R Answer:-A [SM, MTP May 19]
4.	Six children A, B, C, D, E and F are standing in a row. B is between F and D. E is between A and C. A does not stand next to F. D. C does not stand next to D. F is between which of the following pairs of children? (a) B & E (b) B & C (c) B & D (d) B & A Answer :-B [SM, MTP May 19, May 21]
5.	There are eight books kept one over the other. Two books are on Organisation Behaviour, two books on TQM, three books on Industrial Relations and one book is on

	Economics. Counting from the top, the second, fifth and sixth books are on Industrial Relations. Two books on Industrial Relations are between two books on TQM. One book of Industrial Relations is between two books on Organizational Behaviour while the book above the book of Economics is a book of TQM. Which book is the last book from the top? (a) Economics (b) TQM (c) Industrial Relation (d) Organisation Behaviour Answer :-A
6.	Five boys are standing in a row facing East . Pavan is to the left of Tavan , Vipin and Chavan. Tavan , Vipin and Chavan are to the left of Nakul. Chavan is between Tavan and Vipin. If Vipin is fourth from the left , then how far is Tavan from the right ? (a) First (b) Second (c) Third (d) Fourth Answer :-D
7.	Six persons M, N, O, P, Q and R are sitting in two rows with three persons in each row. Both the row are in front of each other. Q is not at the end of any row. P is second the left of R. O is the neighbour of Q and diagonally opposite to P. N is the neighbour of R. Who is in front of N? (a) R (b) Q (c) P (d) M Answer :-B [SM, MTP July 24]
8.	Six persons A, B, C, D, E and F are sitting in two rows, three in each row. - E is not at the end of any row - D is second to the left of F. - C, the neighbor of E, is sitting diagonally opposite to D. - B is the neighbor of F. Which of the following are in one of the two rows

	a) D, B and F b) C, E and B c) A, E and F d) F, B and C Answer :-A
9.	Read the following information carefully and answer the question that follows. Five boys A₁, A₂, A₃, A₄ and A₅ are sitting in a stair in the following way I. A₅ is above A₁ II. A₄ is under A₂. III. A₃ is under A₁ IV. A₅ is between A₄ and A₃. Who is at the lowest position of the stair a) A₁ b) A₃ c) A₅ d) A₂ Answer :-B
10.	Five children are sitting in a row. S is sitting next to P but not T. K is sitting next to R, who is sitting on the extreme left and T is not sitting next to K. Who is/are adjacent to S a) K and P b) R and P c) Only P d) P and T Answer :-D
11.	Five senior citizens are living in a multi-storeyed building. Mr. Muan lives in a flat above Mr. Ashokan, Mr. Lokesh in a flat below Mr. Gaurav, Mr. Ashokan lives in a flat above Mr. Gaurav and Mr. Rakesh lives in a flat below Mr. Lokesh. Who lives in the topmost flat? a) Mr. Lokesh b) Mr. Gaurav c) Mr. Muan d) Mr. Rakesh Answer :-C
12.	In a gathering seven members are sitting in a row. 'C' is sitting left to 'B' but on the right to 'D'. 'A' is sitting right to 'B', 'F' is sitting right to 'E' but left to 'D'. 'H' is sitting left to 'E'. Find the person sitting in the middle. a) C b) D c) E

	d) F Answer :-B
For Q 13 to 17: A to H are seated in straight line facing North. C sits fourth left of G. D sits second to right of G. Only two people sit between D and A. B and F are immediate neighbours of each other. B is not an immediate neighbour of A. H is not neighbour of D.	
13.	Who amongst the following sits exactly in the middle of the persons who sit fifth from the left and the person who sit sixth from the right a) C b) H c) E d) F Answer :-D
14.	Who amongst the following sits third to the right of C? a) B b) F c) A d) E Answer :-C
15.	Which of the following represents persons seated at the two extreme ends of the line a) C,D b) A,B c) D,G d) G,H Answer :-D
16.	What is the position of H with respect to F a) Third to the left b) Immediate right c) Second to right d) Fourth to left Answer :-A
17.	How many persons are seated between A and E? a) One b) Two c) Three d) Four Answer :-A
Study the following information carefully to answer the given questions. Ten Students are A to J are sitting in a row facing west. I.B and F are not sitting on either of the	

edges. II. G is sitting left of D and H is sitting to the right of J III. There are four persons between E and A. IV. I is the north of B and F is the south of D V. J is between A and D and G is in between E and F. VI. There are 2 persons between H and G.	
18.	Who is sitting at the seventh place counting from left? a) H b) C c) J d) Either H or C Answer :-D
19.	Who among the following is definitely sitting at one of the ends? a) C b) H c) E d) Can not be determine Answer :-C
20.	Who are immediate neighbours of I? a) BC b) BH c) AH d) Can not be determine Answer :-D
21.	Who is sitting second left of D? a) G b) F c) E d) J Answer :-A
22.	If G and A interchange their positions, then who become the immediate neighbours of E? a) G and F b) Only F c) Only A d) J and H Answer :-C
Directions (Q. Nos. 23-24) Read the following information carefully and then answer the questions that follow: A group of seven singers, facing the audience, are standing in line on the stage as follows. I. Dis to the immediate right to C. II. F is standing beside G. III. B is to the immediate left of F. IV. E is to the immediate left of A. V. C and B have one person between them.	

VI. A and D have one person between them. [SM, MTP Nov 21]	
23.	Who is on the second extreme right a) D b) F c) G d) E Answer :-B
24.	If we start counting from the left, on which number is B a) 1st b) 2nd c) 3rd d) 5th Answer :-D
Eight persons P to W are sitting in front of one another in two rows. Each row has four persons. P is between U and V and facing North. Q, who is to the immediate left of M is facing W. R is between T and M and W is to the immediate right of V. [SM, MTP1 May 19, MTP2 May 19]	
25.	Who is sitting in front of R? a) U b) Q c) V d) P Answer :- (a)
26.	Who is to the immediate right of R? a) M b) U c) M or T d) None of these Answer :-D
27.	In which of the following pairs, persons are sitting in front of each other? a) MV b) RV c) TV d) UR Answer :-A
28.	Four girls A, B, C, D are sitting around a circle facing the centre. B and C in front of each other, which of the following is definitely true? (a) A and D in front of each other (b) A is not between B and C (c) D is left of C (d) A is left of C Answer :-A [SM, MTP Nov 19, Dec 23]

29.	Six friends A, B, C, D, E and F are sitting in a row facing towards North, C is sitting between A and E, D is not at the end, B is sitting at immediate right of E, F is not at the right end, but D is sitting at 3rd left of E. Which of the following is sitting to the left of D? (a) A (b) F (c) E (d) C Ans : (b) [MTP May 18]
30.	Six girls are standing in such a way that they form a circle, facing the centre. Subbu is to the left of Pappu, Revathi is between Subbu and Nisha, Aruna is between Pappu and Keerthna. Who is to the right of Nisha? (a) Ravathi (b) Aruna (c) Subbu (d) Keerthana Ans : (a) [MTP May 18, June 24]
31.	There are Five houses A, B, C, C, D, E, A is the right of B and E is left of C and right of A, B is right of D, which house is middle (a) A (b) B (c) C (d) D Ans : (a) [MTP Nov 18, June 24 (Similar)]
32.	Girls are sitting on a bench, Q is the left of R but on the right of P. S is to be right of R but one left of T. Who are the extremes (a) P,T (b) P,S (c) Q,T (d) Q,S Ans : (a) [MTP Nov 18]
33.	Five friends P, Q, R, S and T are sitting in a row facing North. Here, S is between T and Q and Q is to the immediate left of R. P is to the immediate left of T. Who is in the

	middle? (a) S (b) T (c) Q (d) R Ans : (a) [MTP Nov 18]
34.	Six friends A, B, C, D, E and F are sitting on a bench, facing towards North. I. A is sitting next to B. II. C is sitting left to D. III. D is not sitting with E. IV. E is on the left end of the bench. V. C is third position from right. VI. A is on the right side of B and to the right side of E. VII. A and C are sitting together. VIII. F is sitting Right of D. 1. At what position A is sitting? (a) Between B and C (b) Between D and C (c) Between E and D (d) Between C and E Ans : A 2. What is position of B? (a) Second from right (b) Centre (c) Extreme left (d) Second from left Ans : D 3. What is position of D? (a) Extreme from left (b) Extreme right (c) Third from left (d) Second from right. Ans : D [MTP Jan 25, May 20]
35.	Six Children A, B, C, D, E and F are sitting in a row facing towards North. C is sitting between A and E, D is not at the end. B is sitting immediate right of E, F is not at the right of end, but D is sitting 3rd left of E. Which of the following is right of D. (a) A (b) F (c) E (d) C Ans : A

	[MTP Jan 25, May 20, June 23]
36.	Five Friends are sitting on a bench. A is to the left of B but on the right of C, D is to the right of B but one the left of E. Who are at the extremes? (a) A, B (b) A, D (c) C, E (d) B, D Ans : C [MTP Jan 25, May 20]
37.	Five students are A,B,C,D and E are standing in arrow . D is on the right of E; B is on the left of E but on right of A. D is next to C on his left. The student in middle is (a) B (b) A (c) E (d) C Ans. (c) [MTP May 19, Nov 21]
38.	In a college party, 5 girls are sitting in a row. F is to the left of M and to the right of O. R is sitting to the right of N but to the left of O. Who is sitting in the middle? (a) O (b) R (c) P (d) M Ans : (a) [MTP May 19]
39.	Seven children A, B, C, D, E, F and G are sitting in a row. G is to be right of D and to the left of B. A is on the right of C, A and D have one child between them. E and B have two children between them. Who is exactly in the middle? (a) A (b) C (c) D (d) G Ans: (c) [MTP Nov 19]
40.	Six friends A, B, C, D, E and F are sitting in row facing East. "C "is between 'A' and 'E'. 'B' is just to the right of 'E' but left of D'. 'F' is not right end. How many persons are to the left of E ? (a) 1 (b) 2

	(c) 3 (d) 4 Ans: (c) [MTP Nov 19, Nov 20]
41.	Five people A, B, C, D and E are seated about a round table. Every chair is spaced equidistant from adjacent chairs. I. C is seated next to A II. A is seated two seats from D. III. B is not seated next to A. Which of the following must be true? (I) D is seated next to B. II E is seated next to A Select the correct answer from the codes given below (a) Only I (b) Only II (c) Both I and II (d) Neither I nor II Ans : (c) [MTP Nov 20]
42.	In a straight line there are six persons sitting in a row? B is between F and D. E is between A and C. A does not stand next to F or D, C does not stand next to D. F is between which of the following? (a) B and E (b) B and C (c) B and D (d) B and A Ans : (b) [MTP Nov 20, May 21, April 24]
43.	Directions to solve (a) P, Q, R, S, T, U, V and W are sitting round the circle and are facing the Centre (b) P is second to the right of T who is the neighbor of R and V. (c) S is not neighbour of P (d) V is neighbour of U (e) Q is not between S and W, W is not between U and S Who is two of the following are not neighbour (a) RV (b) UV (c) RP (d) QW Ans : (a) [MTP Nov 20, May 21]
44.	Directions to solve

	(a) p, Q, R, S, T, U, V and W are sitting round the circle and facing the centre. (b) P is second to the right of T who is neighbour of R and V. (c) S is not the neighbour of U. (d) V is neighbour of U. (e) Q is not between S and W. W is not between u and S Who is immediate left of V? (a) P (b) U (c) R (d) T Ans : (b) What is the position of R (a) Between P and T (b) Second to the right of S (c) to the immediate right of W (d) inadequate data Ans : (a) Which are not following are not neighbour (a) UV (b) VT (c) RV (d) PQ Ans : (c) [MTP Nov 21]
45.	Read the following information carefully and answer the questions that follow. Eight friends A, B, C, D, E, F, G and H are sitting in circle facing the center . B is sitting G and D. H is third to the left of B and second to the right of A. C is sitting between A and G and B and E are not sitting opposite to each other ? Who is third to left of D ? (a) F (b) E (c) A (d) Cannot be determined. Ans : (a) Who is sitting between H and D (a) F (b) E (c) A (d) Cannot be determined. Ans : (b)

	[MTP May 21, June 23] Which of the following statement is not correct ? (a) D and A are sitting opposite to each other (b) C is third to the right of D (c) E is sitting F and D (d) A is sitting C and F Answer(c) [MTP June 23]
46.	Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U. If Q gets a North facing flat and is not next to S. S and U get diagonally opposite flat. R is next to U gets a south facing flat and T gets North facing flat. Whose falt is between Q and S? (a) T (b) U (c) R (d) P Ans: (a) [MTP May 21]
47.	Study the following information carefully to answer the questions given below. P, T, V, R, M, D, K and W are sitting around a circle table facing the centre. V is second to the left of T. T is fourth to the right of M. D and P are not immediate neighbours of T. D is third to the right of P. W is not an immediate neighbour of P. P is to the immediate left of K. Who is Second to the left of K? (a) P (b) R (c) M (d) W Ans : (b) Who is the immediate left of V? (a) D (b) M (c) W (d) None of these Ans : (a) What is R's Position with respect to V? (a) Third to the right (b) Fifth to the right

	(c) Third to the left (d) Second to the left Ans : (a) [MTP Nov 21]
48.	8 Persons A, B, C, D, E, F, G and H are sitting in two rows opposite to each other. Each row has four persons. B and C are sitting in front of each other. C is between D and E. H is sitting immediate left of E. H and F are diagonally opposite. G and B are not near to each other. Who is in front of A? (a) E (b) D (c) C (d) B Ans : (a) [MTP Nov 21]
49.	Study the following information carefully and answer the questions given below. I. P, Q, R, S, T, U and V are sitting on a wall and all of them are facing West. II. S is on the immediate left of R. III. T is at an extreme end and has Q as his neighbor. IV. V is between Q and U. V. S is sitting third from the north end. Who is sitting to the left of S ? (a) Q (b) U (c) T (d) R Ans : (b) Which of the following pairs of people are sitting at the extreme ends ? (a) QV (b) PR (c) TP (d) ST Ans : (c) [MTP May 22]
50.	Five girls are sitting on a bench to be photographed. Seema is to the left of Rani and to the right of Bindu. Mary is to the right of Rani. Reeta is between Rani and Mary. Who is sitting immediate right to Reeta ? (a) Bindu (b) Rani (c) Mary

	(d) Seema Ans : (c) [MTP May 22]
51.	Four ladies A, B, C and D and four gentlemen E, F, G and H are sitting in circle around a table facing each other (i) No two ladies or gentlemen are sitting side by side (ii) C, who is sitting between G and E, facing D (iii) F is between D and A and facing G (iv) H is to the right of B 59. Who is immediate neighbor of B ? (a) G and H (b) E and F (c) A and B Ans : (a) 60. Who is sitting left of A (a) F (b) E (c) C (d) D Ans : (a) [MTP May 22, May 24]
52.	Six students are sitting in row in an examination hall. K is sitting between V and R. V is sitting next to M. M is sitting next to B. B is sitting extreme left and Q is sitting next to R. Who is sitting adjacent to V? (a) M and R (b) M and K (c) K and R (d) M and Q Ans : (b) [MTP May 22]
53.	Read the following information carefully and answer the questions and answer the questions that follow. There are 3 females A, B and E and 4 males C, D, F, and G standing in a straight line. No two females are together. B is to right of C, F and D are not together as A is placed between them. G is not near B or E but E and F are together. D is not to the right of B. Who are in the extreme ends? (a) G and B (b) C and F (c) B and D (d) None of these Ans : 1

	Who is exactly in the middle? (a) A (b) F (c) E (d) None of these Ans : (b) [MTP May 22]
54.	Study the following information carefully and answer the given Questions Seven persons A, B, C, D, E, F and G are sitting in a straight line (not necessarily in the same order) facing North I. Only two persons sit between F and G and G sits second to the left of B. II. D sits third to the left of C III. E sits exactly between G and B and B sits at the extreme right end of the row Who amongst the following sits at the extreme left of the line? (a) F (b) D (c) C (d) E Ans : (b) Who amongst the following sits exactly middle of the line? (a) A (b) C (c) E (d) G Ans : (b) [MTP May 22]
55.	Five students are standing in a circle. Abhinav is between Alok and Ankur. Apurva is on the left of Abhishek. Alok is on the left of Apurva. Who is sitting next to Abhinav on his right? (a) Apurva (b) Ankur (c) Abhishek (d) Alok Ans : (d) [MTP Nov 22, April 23]
56.	Study the following information carefully and answer the questions given below. Six friends A, B, C, D, E and F are sitting in a row facing towards North. C is sitting

	between A and E. D is not at the end. B is sitting at immediate right of E. F is not at the right end but D is sitting at 3rd left of E. How many persons are there to the right of D? (a) One (b) Two (c) Three (d) Four Ans : (d) Which of the following is sitting to the left of D? (a) F (b) C (c) E (d) A Ans : (a) Who is at the immediate left of C? (a) A (b) E (c) Either E or A (d) Cannot be determined Ans : (a) [MTP Nov 22, June 24, June 23]
57.	Five persons are sitting on a bench to be photo graphed, S is to the left of N and to the right of B. M is to the right of N. R is between N and M. Who is sitting immediate right to R. (a) B (b) N (c) M (d) S Ans : (c) [MTP Nov 22]
58.	A, P, R, X, S and Z are sitting in a row. S and Z are in the centre. A and P are at the ends. R is sitting to the left of A. Who is to the right of P? (a) A (b) X (c) S (d) Z Ans : (b) [MTP Nov 22, Nov 23]
59.	A, B, C, D and E are sitting on a bench. A is

	sitting next to B, C is sitting next to D, D is not sitting with E who is on the left end of the bench. C is on the second position from the right. A is to the right of B and E. A and C are sitting together. In which position A is sitting? (a) Between B and D (b) Between B and C (c) Between E and D (d) Between C and E Ans : (b) [MTP Nov 22]
60.	There are four children P, Q, R, S sitting in a row. P occupies seat next to Q but not next to R. If R is not sitting next to S? Who is occupying seat next to adjacent to S. (a) Q (b) P (c) P and Q (d) None of these Ans : (b) [MTP Nov 22]
61.	Six persons A,B,C,D,E and F are standing in a circle.B is between D and C.A is between E and C.F is to the right of D.Who is between A and F? (a) B (b) C (c) D (d) E Ans : (d) [MTP Nov 22]
62.	Five persons are standing in a line. One of the two persons at the extreme ends is a professor and the other a businessman. An advocate is standing to the right of a student. An author is to the left of the businessman. The student is standing between the professor and the advocate. Counting from the left, the advocate is at which place ? (a) 1st (b) 2nd (c) 3rd (d) 5th Ans : (c) [MTP Nov 22, Dec 23]
63.	Six persons A, B, C, D, E and F are sitting in two rows with three persons in each row. Both rows are in front of each other. E is not at the end of the any row and D is second

	left to the F, C is neighbour of E and diagonally opposite to D. If B is neighbour F who is in front of C then who is sitting diagonally to F? (a) C (b) E (c) A (d) D Ans : C [MTP April 23]
64.	P, Q, R S and T are seated in a line facing west. R is sitting at north end and S is sitting at south end. T is neighbor of R and Q. P and Q are seated together, then who is sitting the middle? (a) P (b) Q (c) R (d) S Ans : B [MTP April 23]
65.	Read the following information and answer the Questions that follows. (1) Six friends A, B, C, D, E and F are sitting in a closed circle facing the center. (2) E is to the left of D. (3) C is between A and B. (4) F is between E and A. Who is to the left of B? (a) A (b) C (c) D (d) E Ans : (c) Who is to the right of C? (a) A (b) B (c) D (d) E Ans : (a) [MTP Nov 18]
66.	In a march past, seven persons are standing in a row. Q is standing left to R but right to P. O is standing right to N and left to P. Similarly, S is standing right to R and left to T. Find out who is standing in middle? (a) P (b) Q

	(c) R (d) O Ans : (b) [MTP Nov 18]
67.	8 leaders P, Q, R, S, T, U, V and W are sitting on a bench facing towards North. (i) T is fourth to the left of P (ii) S is fourth to the right of W (iii) U and R are not sitting at the ends, but they are neighbours of T and Q respectively. (iv) P is next to the right of W and but left of Q. Who are sitting at the extreme ends ? (a) T&S (b) P&Q (c) U&R (d) None Ans : a [MTP Dec 24, April 24]
68.	Read the following informations carefully to answer these questions: (i) Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U. (ii) Q gets a North facing flat and is not next to S. (iii) S and U get diagonally opposite flats. (iv) R, next to U, gets a South facing flat and T gets a North facing flat. The flats of which of the other pairs than SU, are diagonally opposite to each other ? (a) QP (b) PT (c) QR (d) TS Ans : D Which of the following combinations gets South facing flats ? (a) UPT (b) URP (c) QTS (d) Data inadequate Ans : A [MTP Dec 24, Dec 23]
69.	A, B, C, D, E and F are sitting around a round table. A is between E and F, E is opposite to

	D, and C is not in either of the neighbouring seats of E. Who is opposite to B ? (a) C (b) D (c) F (d) None of these Ans : (c) [MTP Dec 24, April 24, Dec 23]
70.	Six persons P, Q, R, S, T and U are sitting in two rows, three in each. T is not at the end of any row S is the second to the left of U R the neighbour of T, is sitting diagonally opposite to S. Q is the neighbour of U. Which of the following are sitting diagonally opposite to each other? (a) U and R (b) S and P (c) P and R (d) P and U (e) P and Q Ans : (d) Which of the following are in the same row? (a) P and T (b) T and S (c) R and Q (d) P and Q (e) R and T Ans : (a) Which of the following are in one of the two rows? (a) UQR (b) RTQ (c) SQU (d) PTU (e) PQU Ans : (c) After interchanging seat with T, who will be the neighbours of S in the new position? (a) R and P (b) U and Q (c) Only Q (d) Only P (e) Only R Ans : (a) [MTP Nov 18]

71.	In a line P is sitting 13th from left. Q is sitting 24th from the right and 3rd left from P. How many people are sitting in the line? (a) 34 (b) 31 (c) 32 (d) 33 Ans : D [MTP Nov 23, May 24]
72.	Shyam, Sathish, Amar and Pavan are playing cards. Amar is to the right of Sathish, who is to the right of Shyam. Who is to the right of Amar? (a) Satish (b) Amar (c) Pavan (d) Shyam Ans : C [MTP Nov 23]
73.	A, B, C, D, E, F and G are sitting in a straight line facing north, but not necessarily in the same order. There is only one person between F and C. E sits between A and D. There are only two persons between E and G. F sits on the immediate left of A, who sits in the middle of the row. How many persons are there between E and F (a) 1 (b) 2 (c) 3 (d) 4 Ans : (a) Who among the following sit at the extreme ends on the row ? (a) D, F

	(b) G, C (c) B, C (d) None of these Ans: (c) Who among the following sits to the immediate right of D (a) G (b) E (c) F (d) B Ans: (d) [MTP May 24]
74.	A child is looking for his father. He went 90 meters in the east before turning to his right. He went 20 meters before turning to his right again to look for his father at his uncle's place 30 meters from this point. His father was not there. From there, he went 100 meters to his north before meeting his father in a street. How far did the son meet his father from starting point ? a. 80 m b. 90 m c. 100 m d. 110 m Ans : (c) [MTP May 24]
75.	The length and breadth of a room are 8 m and 6 m respectively. A cat runs along all the four walls and finally along a diagonal order to catch a rat. How much total distance is covered by the cat? a. 10 m b. 14 m c. 38 m d. 48 m Ans : (c) [MTP May 24]

Chapter 12 : Blood Relations

1.	A is B's brother. C is A's mother. D is C's father, E is B's son. How is D related to A? (a) Son (b) Grand Son (c) Grand Father (d) Great Grand Father ANSWER :-C
2.	As is B's brother. C is A's father. D is C's sister and Eis D's mother. How is B related to E? (a) Grand-daughter (b) Great grands daughter (c) Grand aunt (d) Daughter ANSWER :-A
3.	A is B's Sister. C is B's Mother. Dis C's Father. Eis D's Mother. Then how is A related to D? (a) Grand Mother (b) Grand Father (c) Daughter (d) Grands-daughter ANSWER :-D [SM, MTP May 19, July 24]
4.	A is the father of B. C is the daughter of B. D is the brother of B. E is the son of A. What is the relationship between C and E? (a) Brother and Sister (b) Cousins (c) Niece and uncle (d) Uncle and aunt ANSWER:-C
5.	If P is the husband of Q and R is the mother of S and Q. What is R to P? (a) Mother (b) Sister (c) Aunt (d) Mother in Law ANSWER :-D [SM, MTP Nov 22]
6.	P and Q are brothers. R and S are sister. P's son is S's brother. How is Q related to R? (a) Uncle (b) Brother (c) Father (d) Grand Father

	ANSWER :-A [SM, MTP May 18, Nov 18, June 24]
7.	X is the husband of Y. W is the daughter of X. Z is husband of W. N is the daughter of Z. What is the relationship of N to Y? (a) Cousin (b) Niece (c) daughter (d) Grand Daughter ANSWER :-D [SM, MTP May 19]
8.	A reads a book and find the name of the another familiar. The author B is the paternal uncle of C uncle. C is the daughter of A. How is B related to A? (a) Brother (b) Sister (c) Father (d) Uncle ANSWER :-A [SM, MTP May 19]
9.	A's mother is sister of Band she has a daughter C, who is 21 years old. How is B related to C? (a) Uncle (b) Maternal Uncle (c) Niece (d) Daughter ANSWER :-B [SM, MTP May 19]
10.	A is B's brother. C is A's mother. D is C's father. F is A's son. How is F related to D? (a) Son (b) Grandson (c) Great-grandson (d) Grand-daughter ANSWER :-C
11.	A is B's brother. C is A's mother. D is C's father. E is B's son. How is B related to D (a) Son (b) Grand-daughter (c) Grandfather (d) Great grandfather ANSWER :-B
12.	A is B's brother. C is A's mother. Dis C's father. Fis A's son. How is B related to F's

	child? (a) Aunt (b) Cousin (c) Nephew (d) Grandfather ANSWER :-D
13.	A is B's daughter. B is C's mother. D is C's brother. How is D related to A (a) Father (b) Grandfather (c) Brother (d) Son ANSWER :-C [SM, MTP Nov 18]
14.	A is D's brother. D is B's father. B and C are sisters. How is C related to A? (a) Cousin (b) Niece (c) Aunt (d) Nephew ANSWER :-B
15.	A is B's brother. C is A's mother, D is C's father. E is B's son. How is D related to E? (a) Grandson (b) Great Grandson (c) Great Grandfather (d) Grandfather ANSWER :-C
16.	X and Y are the children of A. A is the father of X but Y is not his son. How is Y related to A? (a) Sister (b) Brother (c) Son (d) Daughter ANSWER :-D [SM, MTP Nov 22, Nov 18, Dec 23]
17.	A is B's brother. C is A's mother. D is C's father. E is B's son. How is E related to A? (a) Cousin (b) Nephew (c) Uncle (d) Grandson ANSWER :-B
18.	Based on the statements given below, find out who is the uncle of P? (i) K is the brother of J (ii) M is the sister of K (iii) P is the brother of N (iv) N is the daughter of J (a) K

	(b) J (c) N (d) M ANSWER :-A
19.	A and B are sisters. A is mother of D. B has a daughter C, who is married to F. G is the husband of A. How is C related to D? (a) Cousin (b) Niece (c) Aunt (d) Sister-in-law ANSWER :-A
20.	R and S are brothers. X is the sister of Y and X is mother of R. What is Y to S? (a) Uncle (b) brother (c) Father (d) Mother ANSWER :-A
21.	A is B's brother. C is A's mother. D is C's father. B is D's grand-daughter. How is B related to F. Who is A's son? (a) Aunt (b) Cousin (c) Niece (d) Granddaughter ANSWER :-A
22.	A is the son of B while B and C are sisters to one another. E is the mother of C. If D is the son of E, which of the following statements is correct (a) D is the maternal uncle of A (b) E is the brother of B (c) D is the cousin of A (d) B and D are brothers ANSWER :-A [SM, MTP Nov 21]
23.	P is the father of T. T is the daughter of M. M is the daughter of K. What is P to K? (a) Father (b) Father-in-law (c) Brother (d) Son-in-law ANSWER :-D
24.	A and B are brothers. E is the daughter of F. F is the wife of B. What is the relation of E to A? (a) Sister (b) Daughter (c) Niece (d) Sister-in-law ANSWER :-C

25.	Mand Fare a married couple. A and B are sisters. A is the sister of F. Who is B to M? (a) Sister (b) Sister-in-law (c) Niece (d) Daughter ANSWER :-B
26.	If A is the mother of D. B is not the son of C. C is the father of D, Dis the sister of B, then how is A related to B? (a) Mother (b) Brother (c) Step son (d) Sister ANSWER :-A
27.	A and B are brother and sister respectively. C is A's father. Dis C's sister and Eis D's mother. How is B related to E? (a) Grand daughter (b) Great Grand daughter (c) Aunt (d) Daughter ANSWER :-A
28.	Q is the son of P. X is the daughter of Q. R is the aunty (Bua) of X and L is the son of R, then what is L to P? (a) Grandson (b) Grand-daughter (c) Daughter (d) Nephew ANSWER :-A
29.	P and Q are brothers. R and S are sisters. P's son is S's brother. How is Q related to R? (a) Uncle (b) Brother (c) Father (d) Grandfather ANSWER :-A
30.	A and B are the young ones of C. If C is the mother of B but A is not the daughter of C, then what is the relationship between C and A? (a) Nephew and Aunty (b) Brother and Sister (c) Mother and son (d) Niece and Aunty ANSWER :-C
31.	A is the mother of D and sister of B. B has a daughter C who is married to F. G is the husband of A. How is G related to D?

	(a) Uncle (b) Husband (c) Son (d) Father ANSWER :-D
32.	Pointing towards A, B said "your mother is the younger sister of my mother". How is A related to B? (a) Uncle (b) Cousin (c) Nephew (d) Father ANSWER :-B
33.	A is B's wife's husband's brother. C and D are sisters of B. How is A related to C? (a) Brother (b) Sister-in-law (c) Wife (d) Sister ANSWER :-A
34.	A and B are brothers. C and D are sisters. A's son is D's brother. How is B related to C? (a) Father (b) Brother (c) Uncle (d) Son ANSWER :-C
35.	A is B's sister. C is B's mother. D is C's father. E is D's mother. Then how is A related to D (a) Grandmother (b) Grandfather (c) Daughter (d) Grand-daughter ANSWER :-D
36.	P, Q, R, S, T, U are 6 members of a family in which there are two married couples. T, a teacher is married to a doctor who is mother of R and U. Q the lawyer is married to P. P has one son and one grandson. Of the two married ladies one is a housewife. There is also one student and one male engineer in the family. Which of the following is true about the grand-daughter of the family (a) She is a lawyer (b) She is an engineer (c) She is a student (d) She is a doctor ANSWER :-C
37.	Six members of a family namely A, B, C, D, E

	and F are travelling together. 'B' is the son of C but C is not the mother of B. A and C are married couple. E is the brother of C. D is the daughter of A. F is the brother of B. How many male members are there in the family? (a) 3 (b) 2 (c) 4 (d) 1 ANSWER :- C [SM, MTP July 24]
38.	A's mother is sister of B and has a daughter C. How can A be related to B from among the following? (a) Niece (b) Uncle (c) Daughter (d) Father ANSWER :- A
39.	Rajiv is the brother of Atul. Sonia is the sister of Sunil. Atul is the son of Sonia. How is Rajiv related to Sonia? (a) Nephew (b) Son (c) Brother (d) Father ANSWER :- B
40.	Sita is the niece of Ashok. Ashok's mother is Lakshmi. Kalyani is Lakshmi's mother. Kalyani's husband is Gopal. Parvathi is the mother-in-law of Gopal. How is Sita related to Gopal? (a) Great grandson's daughter (b) Gopal's Sita's father (c) Sita is Gopal's great grand-daughter (d) Grand niece ANSWER :- C
41.	Seema is the daughter-in-law of Sudhir and sister-in-law of Ramesh. Mohan is the son of Sudhir and only brother of Ramesh. Find the relation between Seema and Mohan. (a) Sister-in-law (b) Aunt (c) Cousin (d) Wife ANSWER :- D
42.	Suresh introduces a man as "He is the son of the woman who is the mother of the husband of my mother". How is Suresh related to the man? (a) Uncle

	(b) Son (c) Cousin (d) Grandson ANSWER :- B
43.	Pointing to a lady in a photograph. Meera said. "Her father's only son's wife is my mother-in-law" How is Meera's husband related to that lady in the photo? (a) Nephew (b) Uncle (c) Son (d) Father ANSWER :- A
44.	Pointing to a photograph Vikas said "She is the daughter of my grandfather's only son". How is lady in the photograph related to Vikas in the photograph (a) Father (b) Brother (c) Sister (d) Mother ANSWER :- C
45.	Suresh's sister is the wife of Ram. Ram is Rani's brother. Ram's father is Madhur. Sheetal is Ram's grandmother. Rema is Sheetal's daughter-in-law. Rohit is Rani's brother's son. Who is Rohit to Suresh? (a) Brother-in-law (b) Son (c) Brother (d) Nephew ANSWER :- D [SM, MTP April 23]
46.	Vinod introduces Vishal as the son of the only brother of his father's wife. How is Vinod related to Vishal (a) Cousin (b) Brother (c) Son (d) Uncle ANSWER :- A
47.	Among her children, Ganga's favourites are Ram and Rekha. Rekha is the mother of Sharat, who is loved most by his uncle Mithun. The head of the family is Ram Lal, who is succeeded by his sons Gopal and Mohan. Gopal and Ganga have been married for 35 years and have 3 children. What is the relation between Mithun and Mohan? (a) Uncle (b) Son

	(c) Brother (d) No relation ANSWER :-D
48.	Rahul and Robin are brothers. Promod is Rohin's father. Sheela is Pramod's sister. Prema is Promod's niece. Shubha is Sheela's grand-daughter. How is Rahul related to Shubha? a) Brother b) Cousin c) Uncle d) Nephew ANSWER :-C
49.	Preeti has a son, named Arun. Ram is Preeti's brother. Neeta too has a daughter named Reema. Neeta is Ram's sister. What is Arun's relationship to Reema a) Brother b) Nephew c) Cousin d) Uncle ANSWER :-C
50.	There are 2 film stars. One is the father of the other's son. What is the relationship of the two with each other? a) Grandfather and Grandson b) Grandfather and son c) Husband and wife d) Father and Son ANSWER :-C
51.	Ramu's mother said to Ramu, "My mother has a son whose son is Achyut". How is Achyut relation to Ramu? a) Uncle b) Cousin c) Brother d) Nephew ANSWER :-B
52.	Ravi's father has a son Rohit who has an aunt Laxmi who has a husband Rao whose father-in-law is Mohan. What is the relation of Mohan to Ravi? a) Nephew b) Grandfather c) Son d) Uncle ANSWER :-B
53.	Vijay says, Ananda's mother is the only daughter of my mother". How is Ananda relation to Vijay?

	a) Brother b) Father c) Nephew d) Grandfather ANSWER :-C
54.	Introducing a man, a woman said, "His wife is the only daughter of my mother." How is the woman related with the man? a) Sister-in-law b) Wife c) Aunt d) Mother-in-law ANSWER :-B
55.	A prisoner introduced a boy who came to visit him to the jailor as "Brothers and sisters I have none, he is my father's son's son". Who is the boy? a) Nephew b) Son c) Cousin d) Uncle ANSWER :-B [MTP Dec 24]
56.	A is B's brother. C is D's father. E is B's mother. A and D are brothers. How is E related to C? (a) Sister (b) Sister-in-law (c) Niece (d) Wife Ans : (d) [MTP May 18, June 24]
57.	A is B's brother, C is A's mother, D is C's father, E is B's son, How is B related to D? (a) Son (b) Granddaughter (c) Grandfather (d) Great Grandfather Ans : (b) [MTP May 18, June 24]
58.	A is the mother of D and sister of B. B has a daughter C who is married to F. G is the husband of A. How is G related to D? (a) Uncle (b) Husband (c) Son (d) Father Ans : (d) [MTP May 18, June 24]
59.	Pointing to a lady, a man said, "The son of her

	only brother is the brother of my wife". How is lady is related to man? (a) Mother's sister (b) Grandmother (c) Sister of father-in-law (d) Maternal Aunt Ans : C [MTP Jan 25, May 20]
60.	A family has a man, his wife, their four sons and their wives. The family of every son also 3 sons and one daughter. Find out the total number of male members in the whole family? (a) 4 (b) 8 (c) 12 (d) 17 Ans : D [MTP Jan 25, May 20]
61.	Given that 1. A is mother of B. 2. C is son of A. 3. D is brother of E. 4. E is daughter of B. The grandmother of D is (a) A (b) B (c) C (d) E Ans : A [MTP Jan 25, May 20]
62.	Read the following information and answer the question 'A+B' means 'A is the daughter of B'. 'A × B' means 'A is the son of B'. 'A - B' means 'A is the wife of B'. If $P \times Q - S$, which of the following is true (a) S is wife of B (b) S is father of P (c) P is daughter of Q (d) Q is father of P Ans : B [MTP Jan 25, May 20]
63.	Read the following information and answer the following: I. In a family six members A,B,C, D, E and F, there are two married couples. II. D is the Grand mother of A and mother B. III. C is wife of B and mother of F IV. F is grand daughter of E

	1. Who is C to A (a) Daughter (b) Grandmother (c) Mother (d) Cannot be determined Ans : C 2. How many male members are in the family (a) Two (b) Three (c) Four (d) Cannot be determined Ans : D [MTP Jan 25]
64.	C is mother of A and B. If D is the husband of B, then what is C to D (a) Mother (b) Aunt (c) Mother-in Law (d) Sister Ans. (c) [MTP May 19, Nov 19]
65.	A, Q, Y and Z are different persons. Z is the father of Q. A is the daughter of Y and Y is the son of Z. If P is the son of Y and B is the brother of P, then (a) B and Y are brothers (b) A is sister of B (c) Z is the uncle of B (d) Q and Y are brothers Ans. (b) [MTP May 19]
66.	A is father of C and D is son of B. E is brother of A. If C is sister of D how is B related to E? (a) Sister-in-Law (b) Sister (c) Brother (d) Brother-in-Law Ans. (a) [MTP May 19]
67.	Read the following information carefully to answer the questions that follow. I. 'P + Q' means 'P is father of Q' II. 'P - Q' means 'P is mother of Q' III. 'P × Q' means 'P is brother of Q' IV. 'P ÷ Q' means 'P is sister of Q' Which of the following means 'M' is maternal uncle of T? (a) $M \div K - T$ (b) $M \times K - T$ (c) $M \times K - T$

	(d) M÷K+T Ans: (b) [MTP Nov 19]
68.	Pointing a man to photo graph, a man is said to a woman, "His mother is the only daughter of your father". How is the woman is related to the man in the photograph? (a) Sister (b) Mother (c) Wife (d) Daughter Ans: (b) [MTP Nov 19, April 23, April 23]
69.	Moni is daughter of Sheela. Sheela is wife of my wife's brother. How Moni is related to my wife? (a) Cousin (b) Niece (c) Sister (d) Sister-in-law Ans: (b) [MTP Nov 19]
70.	Pointing to a photograph of a boy, Ravi said, "He is son of the only son of my mother". How is Ravi related to that boy? (a) Brother (b) Uncle (c) Cousin (d) Father Ans : (d) [MTP Nov 20, May 21]
71.	If A +B means A is brother of B, A-B means A is sister of B, and A × B means A is the father of B . Which of the following means that C is the son of M? (a) M-N×C+F (b) F-C+ N×M (c) N+M-F×C (d) M×N-C+F Ans : (d) [MTP Nov 20, May 21]
72.	There are two couple in a family. K has two children. M is wife of Q, who is the brother of B. F is daughter K. U is sister of S, who is son of O. T is the son of B, who is the male. How U is related to T? (a) Mother (b) Brother (c) Sister

	(d) Cousin Ans : (d) [MTP Nov 20, Dec 24]
73.	If D is brother of B and B is related C. To answer this question which of the following statements are necessary? I. The son of D is the grandson of C. II. B is the sister of D (a) Only 1 (b) Only II (c) Either I or II (d) I and II Ans : (d) [MTP Nov 20, May 21]
74.	If A+B means A is the sister of B, A × B means A is the wife of B, A % B means A is the father of B and A - B means A is the brother of B. Which of the following means T is the daughter of P? (a) P × Q % R + S - T (b) P × Q % R - T + S (c) P × Q % R + T - S (d) P × Q % R - T + S Ans : (b) [MTP May 21]
75.	Anil said "This girl is the wife of the grandson of my mother". How is Anil related to the girl? (a) Brother (b) Grandfather (c) Husband (d) Father-in-law Ans : (d) [MTP May 21]
76.	P is the mother of K, K is the sister of D. D is the father of J. How is P related to J? (a) Mother (b) Grandmother (c) Aunt (d) Data is inadequate. Ans : (b) [MTP May 21, Nov 23]
77.	In a family, there are six members A, B, C, D, E and F. A and B are a married couple, A being the male member. D is the only son of C, who is the brother of A. E is the sister of D. B is the daughter-in-law of F, whose husband has died. How is E related to C ? (a) Sister

	(b) Daughter (c) Cousin (d) Mother Ans : (b) [MTP May 21]
78.	A, B, C, D, E and F are members of the family. B is the son A but A is not mother B, A and C are married couple. F is brother of A. D is the sister of B. E is son of C. How many male members are in the family? (a) 1 (b) 2 (c) 3 (d) 4 Ans: (d) [MTP May 21]
79.	'X @ Y' means 'X is the mother of Y'; 'X \$ Y' means 'X is the husband of Y'; 'X # Y' means 'X is the sister of Y'. 'X * Y' means 'X is the son of Y'. Which of the following indicates the relationship 'A is daughter of P'? (a) P @ B # F * A (b) P @ B # A * F (c) A # F * B @ P (d) A # F * B \$ P Ans : (d) [MTP Nov 21]
80.	Read the following information carefully and answer the questions given below? There are six children playing football, namely P, Q, R, S, T and U. P and T are bothers, U is sister of T, R is the only son of P's uncle, Q and S are the daughters of the only brother of R's father. How many female players are there? (a) one (b) two (c) three (d) four Ans : (c) How is S is related to P (a) uncle (b) sister (c) niece (d) cousin Ans : (b)
81.	Pointing towards photograph. Vinod said, "she

	is the daughter of my wife's mother's only daughter". How is Vinod is related to the girl in the Photograph (a) cousin (b) uncle (c) father (d) none Ans : (c) [MTP1 Nov 21, MTP2 Nov 21, RTP Jan 25]
82.	Pointing to a photograph Lalita says, "He is the son of the only son of my grandfather." How is the man in the photograph related to Lalita? (a) Brother (b) Uncle (c) Cousin (d) Data is inadequate Ans : (a) [MTP Nov 21]
83.	Pointing to a photograph. Ram said, "He is the son of the only daughter of the father of my brother." How is Ram related to the man in the photograph? (a) Nephew (b) Brother (c) Father (d) Maternal Uncle Ans : (d) [MTP Nov 21]
84.	D is daughter of E . A is son of D . C is brother of A and B is sister of A . F is brother of D . How F is related to B ? (a) Father-in -Law (b) Uncle (c) Brother (d) Mother-in-law Ans : (b) [MTP May 22]
85.	Introducing a boy a girl said, "He is the son of the daughter of the father of my uncle ". Who is the boy to the girl ? (a) Brother (b) Nephew (c) Uncle (d) Son-in-law Ans : (a) [MTP May 22]
86.	It is given that "A is the mother of B; B is the sister of C; C is the father of D". How is A related to D? (a) Mother (b) Grandmother

	(c) Aunt (d) Sister Ans : (b) [MTP may 22]
87.	Rita told Mani, "The girl I met yesterday at the beach was the youngest daughter of the brother-in-law of my friend's mother." How is the girl related to Rita's friend ? (a) Cousin (b) Daughter (c) Niece (d) Aunt Ans : (a) [MTP May 22]
88.	Sanjay has three daughters, and each daughter has a brother. How many male members are there in the family? (a) 4 (b) 2 (c) 3 (d) 1 Ans : (b) [MTP May 22, RTP Sep 24]
89.	E is the son of A. D is the son of B. E is married to C. C is B's daughter. How is D related to E ? (a) Brother (b) Uncle (c) Brother-in-law (d) Husband Ans : 3 [MTP May 22]
90.	Pointing towards a girl in the photograph, Pooja said, "She is the mother of Janaki whose father is my son." How is Pooja related to the girl in the photograph? (a) Mother (b) Cousin (c) Aunt (d) Mother-in-Law Ans : 4 [MTP May 22]
91.	'P×Q' means 'P is the father of Q'. (ii) 'P-Q' means 'P is the sister of Q'. (iii) 'P+Q' means 'P is the mother of Q'. (iv) 'P÷Q' means 'P is the brother of Q'. In the expression $B+D\times M\div N$, how M is related to B (a) Granddaughter (b) Son

	(c) Grandson (d) Granddaughter or Grandson Ans : 3 [MTP May 22]
92.	There are six children playing football namely A, B, C, D, E and F. A and E are brothers. F is the sister of E. C is the only son of A's uncle. B and D are the daughters of the brother of C's father. How is C related to F ? (a) Cousin (b) Brother (c) Son (d) Uncle Ans : 1 [MTP May 22]
93.	Mr. Vimlesh said, "This girl is the wife of the grandson of my mother." How is the Mr. Vimlesh related to the girl? (a) Father (b) Grand Father (c) Husband (d) Father-in-Law Ans : (b) [MTP May 22]
94.	B is the brother of A whose only sister is mother of C, D is maternal grandmother of C. How is A related to D? (a) Aunt (b) Daughter-in-law (c) Daughter (d) Nephew Ans : (c) [MTP1 Nov 22, MTP 2 Nov 22]
95.	If $X+Y$ means X is the mother of Y; $X-Y$ means X is the brother of Y; $X\%Y$ means X is the father of Y and $X\times Y$ means X is the sister of Y, Which of the following shows that A is the maternal uncle of B? (a) $B+D\times C-A$ (b) $B-D\%A$ (c) $A-C+D\times B$ (d) $A+C\times D-B$ Ans : (c) [MTP Nov 22]
96.	Read the following information and answer the questions given below. Anita is the niece of Prateek's mother. Anita's mother is Prateek's aunt. Rohan is Anita's mother's brother. Rohan's mother is Anita's grandmother. From this information.

	deduce the relationship between. Rohan's mother is _____ to Anita's mother. (a) Aunt (b) Mother (c) No relation (d) Sister Ans : (b) Prateek's and Anita's mother are _____ (a) Cousin sister (b) Sister-in-law (c) Friends (d) Sisters Ans : (d) Rohan is Prateek's _____ (a) Brother (b) Brother-in-law (c) Uncle (d) Cousin brothers Ans : (c) [MTP Nov 22]
97.	If X is brother of son of Y's son, then how is X related to Y ? (a) Brother (b) Cousin (c) Grandson (d) Son Ans : (c) [MTP Nov 22, Dec 23]
98.	P is Q's daughter, Q is R's mother, S is R's brother. How is S related to P? (a) Father (b) Grandfather (c) Brother (d) Son Ans : (c) [MTP Nov 22]
99.	In a joint family, there are father, mother, 3 married sons and one unmarried daughter. Out of the sons, two have 2 daughters each and one has a son only. How many female members are there in the family? (a) 3 (b) 6 (c) 9 (d) 8 Ans : C [MTP April 23]
100.	When Rani saw Vinit, she recollected that "He

	is the brother of my grandfather's son". How is Rani related to Vinit? (a) Aunt (b) Daughter (c) Sister (d) Niece Ans : D [MTP April 23]
101.	Annanya is mother of Satya and Shyam is the son of Bhima, Shiva is brother of Annanya. If Satya is sister of Shyam, How Bhima is related to Shiva? (a) Son (b) Cousin (c) Brother-in-law (d) Son-in-law Ans : C [MTP April 23]
102.	Suman is daughter-in-law of Rakesh and sister-in-law of Rajesh, Ramesh is the son of Rakesh and only brother of Rajesh. Find the relation of Suman with Ramesh. (a) Sister-in-law (b) Cousin (c) Aunt (d) Wife Ans : D [MTP April 23]
103.	A is the sister of B. B is the brother of C. C is the son of D. How is D related to A? (a) Mother (b) Daughter (c) Son (d) Uncle Ans : (a) [MTP Nov 18, Dec 23]
104.	If P is the husband of Q and R is the mother of S and Q. What is R to P? (a) Mother (b) Sister (c) Aunt (d) Mother-in-law Ans : (d) [MTP Nov 18]
105.	P is the father of T. T is the daughter of M. M is the daughter of K. What is P to K? (a) Father (b) father-in-law (c) Brother (d) Son-in-law

	Ans : (d) [MTP Nov 18]
106.	A and B are brothers. E is the daughter of F. F is the wife of B. What is the relation of E to A? (a) Sister (b) Daughter (c) Niece (d) Daughter Ans : (c) [MTP Nov 18]
107.	Pointing out to a photograph, a man tells his friend, "She is the daughter of the only son of my father's wife." How is the girl in the photograph related to the man? (a) Daughter (b) Mother (c) Cousin (d) Sister Ans: (b) [MTP June 24]
108.	A party consists of grandmother, father, mother, four sons and their wives and one son and two daughters to each of the sons. How many females are there in all? (a) 13 (b) 16 (c) 18 (d) 24 Ans: (a) [MTP June 24]
109.	Pointing to a man in a photograph, a woman said, "the father of his brother is the only son of my grandfather", how is the woman related to the man in the photograph? (a) Mother (b) Aunt (c) Daughter (d) Sister Ans : d [MTP Dec 24]
110.	R is the father of P, who is son in law of M and S is the mother of G. S is a sister of K, who is a brother-in-law of P and H is the daughter of T, Who is a grandmother of G ? How is G is related to P ? (a) Son (b) Daughter (c) Grand daughter

	(d) Cannot be determined Ans : C If M is a Female, then How is H is related to M ? (a) Son-in-Law (b) Daughter-in-law (c) Mother-in-law (d) Father-in-law Ans : B [MTP Dec 24]
111.	Read the following information and answer the given below it : (i) A is the father of C, But C is not his son, (ii) E is the daughter of C. F is the spouse of A . (iii) B is the brother of C. D is the son of B. (iv) G is the spouse of B. H is the father of G Q. Who is the grand mother of D? (a) A (b) C (c) F (d) H Ans : (c) Q. Who is son of F (a) B (b) C (c) D (d) E Ans : (a) [MTP April 24]
112.	A is the father of C and D is the son of B. E is the brother of A . If C is the sister of D, how is B is related to E? (a) Daughter (b) Brother-in-law (c) Husband (d) Sister-in-law Ans : (d) [MTP April 24]
113.	If 'P+Q' means 'P is the father of Q', 'P×Q' means 'P is the brother of Q', 'P-Q' means 'P is the mother of Q', then which of the following is definitely true about 'C-A+B'? (a) B is the son of A

	(b) A is the son of C (c) B is the father of C (d) C is the mother of B Ans : (b) [MTP April 24]
114.	T, S and R are three brothers. T's son Q is married to K and they have one child Rahul blessed to them. M the son of S is married to H and this couple is blessed with a daughter Madhvi. R has daughter N who is married to P. This couple has one daughter Karuna born to them. How is Madhvi related to S? (a) Daughter (b) Niece (c) Granddaughter (d) None of these Ans : (c) [MTP July 24]
115.	(i) F is the brother of A. (ii) G is the daughter of A. (iii) K is the sister of F. (iv) G is the brother of C. Who is the uncle of G? (a) K (b) F (c) A (d) C Ans : B [MTP Dec 23]
116.	C is wife of B. E is the son of C. A is the brother of B and father of D. What is the relationship of E to D? (a) Cousin (b) Mother (c) Sister (d) Brother Ans : A [MTP Dec 23, RTP May 25]
117.	A is B's sister. C is B's mother. D is C's father. E is D's mother. Then how A is related to D. (a) Grandfather (b) Grandmother (c) Daughter (d) Granddaughter Ans : A [MTP Nov 23]
118.	There are seven members A, C, D, E, F, G and H in a family. There are two fathers, one mother, two sisters and four brothers. E is a sister-in-law of D. G is a daughter of C. F is the brother of E. A is a grandfather of G. E is

	a mother of H. How is H related to A? (a) Grandson (b) Granddaughter (c) Son (d) Cannot be determined Ans : A How many male members in the family? (a) 4 (b) 5 (c) 3 (d) Data Inadequate Ans : B [MTP Nov 23, July 24]
119.	P \$ Q means P is the brother of Q; P # Q means P is the mother of Q; P * Q means P is the daughter of Q If the code of family is A # B \$ C * D, who is the father in them? (a) D (b) B (c) C (d) A Ans : A [MTP Nov 23, July 24]
120.	If A+B means B is the brother of A; A×B means B is the husband of A; A-B means A is the mother of B and A % B means A is the father of B, which of the following relations shows that Q is the grandmother of T ? (a) Q-P+R%T (b) PXQ%R-T (c) P×Q%R+T (d) P+Q%R-T Ans : A [MTP Nov 23, July 24]
121.	A man said to a woman, "Your mother's husband's sister is my aunt." How is the woman related to the man? (a) Granddaughter (b) Daughter (c) Sister (d) Aunt Answer(c) [MTP June 23]
122.	If X + Y means X is the mother of Y; X - Y means X is the brother of Y; X % Y means X is the father of Y and X × Y means X is the sister of Y,

	which of the following shows that O is the maternal uncle of L? (a) $L - N + M \times O$ (b) $O + S \times N - L$ (c) $O - M + N \times L$ (d) $L - S \% O$ Answer(c) [MTP June 23]
123.	The brother of X's mother is the only son of Y's mother's father. How is Y's mother related to X. (a) Mother (b) Daughter (c) Grandmother (d) Cannot be determined Answer(a) [MTP June 23]
124.	In a certain language, '+' means father of, '-' means daughter of, '*' means son of, and '/' means mother of. For example, $X+Y-Z$ means that X is the father of Y and Y is the daughter of Z. $A + F - K / G + L * H$ How is H related to A? (a) Sister-in-law (b) Daughter-in-Law (c) Daughter (d) Grand-Daughter Answer(b) [MTP June 23]
125.	If $A+B$ means, "A is the son of B" $A-B$ means, "A is the daughter of B" $A*B$ means, "A is the wife of B" $A\\$B$ means, "A is the sister of B". If $A\\$B-C*D$ is true, how is D related to B? (a) Wife (b) Father (c) Grandmother (d) Grandfather Answer(b) [MTP June 23]
126.	Pointing to the lady in the photograph, Seema said, "Her son's father is the son-in-law of my

	mother." How is Seema related to the lady? a. Sister b. Mother c. Cousin d. Aunt Ans : (a) [MTP May 24]
127.	A husband and wife had five married sons and each of these had four children. How many members are there in the family? (a) 50 (b) 40 (c) 32 (d) 36 Ans : (c) [MTP May 24]
128.	A and B both are children of C. If C is the mother of A, A is the son of C but B is not the daughter of C, then how are A and B mutually related? a. A is the brother of B b. A is the nephew of B c. A is the sister of B d. A is the cousin of B Ans : (a) [MTP May 24]

Chapter 13: Statistical Description Of Data

Unit 1 Exercise

SET A

1.	Which of the following statements is false? (a) Statistics is derived from the Latin word 'Status' (b) Statistics is derived from the Italian word 'Statista' (c) Statistics is derived from the French word 'Statistik' (d) None of these. Ans : (c) [SM, MTP April 24]
2.	Statistics is defined in terms of numerical data in the (a) Singular sense (b) Plural sense (c) Either (a) or (b) (d) Both (a) and (b). Ans : (b)
3.	Statistics is applied in (a) Economics (b) Business management (c) Commerce and industry (d) All these. Ans : (d) [SM, MTP May 19]
4.	Statistics is concerned with (a) Qualitative information (b) Quantitative information (c) (a) or (b) (d) Both (a) and (b). Ans : (d) [SM, MTP May 18, Nov 18, June 24, Nov 21]
5.	An attribute is (a) A qualitative characteristic (b) A quantitative characteristic (c) A measurable characteristic (d) All these. Ans : (a)
6.	Annual income of a person is (a) An attribute (b) A discrete variable (c) A continuous variable (d) (b) or (c).

7.	Marks of a student is an example of (a) An attribute (b) A discrete variable (c) A continuous variable (d) None of these. Ans : (b)
8.	Nationality of a student is (a) An attribute (b) A continuous variable (c) A discrete variable (d) (a) or (c). Ans : (a)
9.	Drinking habit of a person is (a) An attribute (b) A variable (c) A discrete variable (d) A continuous variable. Ans : (a)
10.	Age of a person is (a) An attribute (b) A discrete variable (c) A continuous variable (d) A variable. Ans : (c)
11.	Data collected on religion from the census reports are (a) Primary data (b) Secondary data (c) Sample data (d) (a) or (b). Ans : (b) [SM, MTP April 24]
12.	The data collected on the height of a group of students after recording their heights with a measuring tape are (a) Primary data (b) Secondary data (c) Discrete data (d) Continuous data. Ans: (a)
13.	The primary data are collected by (a) Interview method

	(b) Observation method (c) Questionnaire method (d) All these. Ans : (d) [SM, MTP Nov 21, May 19]
14.	The quickest method to collect primary data is (a) Personal interview (b) Indirect interview (c) Telephone interview (d) By observation. Ans : (c)
15.	The best method to collect data, in case of a natural calamity, is (a) Personal interview (b) Indirect interview (c) Questionnaire method (d) Direct observation method. Ans : (a) [SM, MTP May 19, May 21]
16.	In case of a rail accident, the appropriate method of data collection is by (a) Personal interview (b) Direct interview (c) Indirect interview (d) All these. Ans : (c)
17.	Which method of data collection covers the widest area? (a) Telephone interview method (b) Mailed questionnaire method (c) Direct interview method (d) All these. Ans : (b)
18.	The amount of non-responses is maximum in (a) Mailed questionnaire method (b) Interview method (c) Observation method (d) All these. Ans : (a)
19.	Some important sources of secondary data are (a) International and Government sources (b) International and primary sources (c) Private and primary sources (d) Government sources. Ans : (a)
20.	Internal consistency of the collected data can be checked when (a) Internal data are given

	(b) External data are given (c) Two or more series are given (d) A number of related series are given. Ans : (d)
21.	The accuracy and consistency of data can be verified by (a) Internal checking (b) External checking (c) Scrutiny (d) Both (a) and (b). Ans : (c)
22.	The mode of presentation of data are (a) Textual, tabulation and diagrammatic (b) Tabular, internal and external (c) Textual, tabular and internal (d) Tabular, textual and external. Ans : (a)
23.	The best method of presentation of data is (a) Textual (b) Tabular (c) Diagrammatic (d) (b) and (c). Ans : (b)
24.	The most attractive method of data presentation is (a) Tabular (b) Textual (c) Diagrammatic (d) (a) or (b). Ans : (c)
25.	For tabulation, 'caption' is (a) The upper part of the table (b) The lower part of the table (c) The main part of the table (d) The upper part of a table that describes the column and sub-column. Ans : (d)
26.	'Stub' of a table is the (a) Left part of the table describing the columns (b) Right part of the table describing the columns (c) Right part of the table describing the rows (d) Left part of the table describing the rows. Ans : (d) [SM, MTP May 19, April 23]
27.	The entire upper part of a table is known as (a) Caption

	(b) Stub (c) Box head (d) Body. Ans : (c) [SM, MTP May 19]
28.	_____ in the entire upper part of the table which includes columns and sub-column numbers, unit(s) measurement (a) Stub (b) Box-head (c) Body (d) Caption Ans : (b) [MTP Nov 18, May 24]
29.	The unit of measurement in tabulation is shown in (a) Box head (b) Body (c) Caption (d) Stub. Ans : (a)
30.	In tabulation source of the data, if any, is shown in the (a) Footnote (b) Body (c) Stub (d) Caption. Ans : (a) [SM, MTP April 24]
31.	Which of the following statements is untrue for tabulation? (a) Statistical analysis of data requires tabulation (b) It facilitates comparison between rows and not columns (c) Complicated data can be presented (d) Diagrammatic representation of data requires tabulation. Ans : (b)
32.	Hidden trend, if any, in the data can be noticed in (a) Textual presentation (b) Tabulation (c) Diagrammatic representation (d) All these. Ans : (c)
33.	Diagrammatic representation of data is done by (a) Diagrams (b) Charts

	(c) Pictures (d) All these. Ans : (d)
34.	The most accurate mode of data presentation is (a) Diagrammatic method (b) Tabulation (c) Textual presentation (d) None of these. Ans : (b) [SM, MTP April 23]
35.	The chart that uses logarithm of the variable is known as (a) Line chart (b) Ratio chart (c) Multiple line chart (d) Component line chart. Ans : (b)
36.	Multiple line chart is applied for (a) Showing multiple charts (b) Two or more related time series when the variables are expressed in the same unit (c) Two or more related time series when the variables are expressed in different unit (d) Multiple variations in the time series. Ans : (b)
37.	Multiple axis line chart is considered when (a) There is more than one time series (b) The units of the variables are different (c) (a) or (b) (d) (a) and (b). Ans : (d)
38.	Horizontal bar diagram is used for (a) Qualitative data (b) Data varying over time (c) Data varying over space (d) (a) or (c). Ans : (d)
39.	Vertical bar diagram is applicable when (a) The data are qualitative (b) The data are quantitative (c) When the data vary over time (d) (b) or (c). Ans : (d)
40.	Divided bar chart is considered for (a) Comparing different components of a variable (b) The relation of different components

	to the table (c) (a) or (b) (d) (a) and (b). Ans : (d)
41.	In order to compare two or more related series, we consider (a) Multiple bar chart (b) Grouped bar chart (c) (a) or (b) (d) (a) and (b). Ans : (c)
42.	Pie-diagram is used for (a) Comparing different components and their relation to the total (b) Representing qualitative data in a circle (c) Representing quantitative data in circle (d) (b) or (c). Ans : (a) [SM, MTP May 19]
43.	A frequency distribution (a) Arranges observations in an increasing order (b) Arranges observation in terms of a number of groups (c) Relates to a measurable characteristic (d) All these. Ans : (d) [SM, MTP May 19]
44.	The frequency distribution of a continuous variable is known as (a) Grouped frequency distribution (b) Simple frequency distribution (c) (a) or (b) (d) (a) and (b). Ans : (a)
45.	The distribution of shares is an example of the frequency distribution of (a) A discrete variable (b) A continuous variable (c) An attribute (d) (a) or (c). Ans : (a)
46.	The distribution of profits of a blue-chip company relates to (a) Discrete variable (b) Continuous variable (c) Attributes (d) (a) or (b).

	Ans : (b)
47.	Mutually exclusive classification (a) Excludes both the class limits (b) Excludes the upper class limit but includes the lower class limit (c) Includes the upper class limit but excludes the upper class limit (d) Either (b) or (c). Ans : (b)
48.	Mutually inclusive classification is usually meant for (a) A discrete variable (b) A continuous variable (c) An attribute (d) All these. Ans : (a)
49.	Mutually exclusive classification is usually meant for (a) A discrete variable (b) A continuous variable (c) An attribute (d) Any of these. Ans : (d)
50.	The LCB is (a) An upper limit to LCL (b) A lower limit to LCL (c) (a) and (b) (d) (a) or (b). Ans : (b)
51.	The UCB is (a) An upper limit to UCL (b) A lower limit to LCL (c) Both (a) and (b) (d) (a) or (b). Ans : (a)
52.	length of a class is (a) The difference between the UCB and LCB of that class (b) The difference between the UCL and LCL of that class (c) (a) or (b) (d) Both (a) and (b). Ans : (a)
53.	For a particular class boundary, the less than cumulative frequency and more than cumulative frequency add up to (a) Total frequency (b) Fifty per cent of the total frequency (c) (a) or (b) (d) None of these.

	Ans : (a)
54.	Frequency density corresponding to a class interval is the ratio of (a) Class frequency to the total frequency (b) Class frequency to the class length (c) Class length to the class frequency (d) Class frequency to the cumulative frequency. Ans : (b) [SM, MTP Nov 22]
55.	Relative frequency for a particular class (a) Lies between 0 and 1 (b) Lies between 0 and 1, both inclusive (c) Lies between -1 and 0 (d) Lies between -1 to 1. Ans : (a) [SM, MTP May 22]
56.	Mode of a distribution can be obtained from (a) Histogram (b) Less than type ogives (c) More than type ogives (d) Frequency polygon. Ans : (a) [SM, MTP May 19]
57.	Median of a distribution can be obtained from (a) Frequency polygon (b) Histogram (c) Less than type ogives (d) None of these. Ans : (c) [SM, MTP May 22, Nov 22, Jan 25, RTP Sep 24]
58.	A comparison among the class frequencies is possible only in (a) Frequency polygon (b) Histogram (c) Ogives (d) (a) or (b). Ans : (b)
59.	Frequency curve is a limiting form of (a) Frequency polygon (b) Histogram (c) (a) or (b) (d) (a) and (b). Ans : (c)
60.	Most of the commonly used frequency curves

	are (a) Mixed (b) Inverted J-shaped (c) U-shaped (d) Bell-shaped. Ans : (d)
61.	The distribution of profits of a company follows (a) J-shaped frequency curve (b) U-shaped frequency curve (c) Bell-shaped frequency curve (d) Any of these. Ans : (c) [SM, MTP Nov 22]
62.	The J shaped curve starts with a _____ frequency (a) Minimum (b) Maximum (c) Either maximum or minimum (d) none of these Ans : (a) [MTP Nov 18]
63.	There are _____ types of frequency curves (a) 1 (b) 2 (c) 3 (d) 4 Ans : (d) [MTP Nov 18]
64.	Ogive is also called as (a) frequency graph (b) cumulative frequency graph (c) Histogram (d) None of these Ans : (b) [MTP Nov 18]
65.	The technician of graphic presentation is extremely helpful in which of the following (a) Analysing the changes at different points of Time (b) Analysing cause and effect relationship (c) Analysing proportional relationship (d) Analysing the degree of relationship Ans : (a) [MTP Nov 18]

SET B

1.	Out of 1000 persons, 25 per cent were industrial workers and the rest were agricultural workers. 300 persons enjoyed world cup matches on TV. 30 per cent of the people who had not watched world cup

matches were industrial workers. What is the number of agricultural workers who had enjoyed world cup matches on TV?

(a) 260
(b) 240
(c) 230
(d) 250

Ans : (a)

2. A sample study of the people of an area revealed that total number of women were 40% and the percentage of coffee drinkers were 45 as a whole and the percentage of male coffee drinkers was 20. What was the percentage of female non-coffee drinkers?

(a) 10
(b) 15
(c) 18
(d) 20

Ans : (b)

3. Cost of sugar in a month under the heads raw materials, labour, direct production and others were 12, 20, 35 and 23 units respectively. What is the difference between the central angles for the largest and smallest components of the cost of sugar?

(a) 72°
(b) 48°
(c) 56°
(d) 92°

Ans : (d)

[SM, MTP May 22, Nov 22]

4. The number of accidents for seven days in a locality are given below :

No. of Accidents	0	1	2	3	4	5	6
Frequency	15	19	22	31	9	3	2

What is the number of cases when 3 or less accidents occurred?

(a) 56
(b) 6
(c) 68
(d) 87

Ans : (d)

[SM, MTP Nov 20(similar)]

5. The following data relate to the incomes of 86 persons :

Income in Rs.	500-999	1000-1499	1500-1999	2000-2499
No. of Persons	15	28	36	7

What is the percentage of persons earning more than Rs. 1500?

(a) 50
(b) 45
(c) 40
(d) 60

Ans : (a)

[SM, MTP Nov 20(Similar), Nov 21]

6. The following data relate to the marks of a group of students:

Marks	Below 10	Below 20	Below 30	Below 40	Below 50
No. of Students	15	38	65	84	100

	How many students got marks more than 30? (a) 65 (b) 50 (c) 35 (d) 43 Ans : (c)																	
	[SM, MTP Nov 20, Nov 21, Jan 25]																	
7.	Find the number of observations between 250 and 300 from the following data :																	
	Value		More than 200		More than 250		More than 300		More than 350									
	No. of observations		56		38		15		0									
	(a) 56 (b) 23 (c) 15 (d) 8 Ans : (b)																	
	[SM, MTP may 20, Jan 25]																	
8.	No. of Accidents		0		1		2		3		4		5		6		7	
	Frequency		36		27		33		29		24		27		18		9	
	In how many cases 5 or more accidents occur? (a) 96 (b) 133 (c) 78 (d) 54 Ans : (d)																	
	[MTP May 21]																	

SET C

1.	In a study about the male and female students of commerce and science departments of a college in 5 years, the following datas were obtained : <table border="1"> <tr> <th>1995</th><th>2000</th></tr> <tr> <td>70% male students</td><td>75% male students</td></tr> <tr> <td>65% read Commerce</td><td>40% read Science</td></tr> <tr> <td>20% of female students read Science</td><td>50% of male students read Commerce</td></tr> <tr> <td>3000 total No. of students</td><td>3600 total No. of students.</td></tr> </table> After combining 1995 and 2000 if x denotes the ratio of female commerce student to female Science student and y denotes the ratio of male commerce student to male Science student, then (a) $x = y$ (b) $x > y$ (c) $x < y$ (d) $x \geq y$ Ans : (b)	1995	2000	70% male students	75% male students	65% read Commerce	40% read Science	20% of female students read Science	50% of male students read Commerce	3000 total No. of students	3600 total No. of students.
1995	2000										
70% male students	75% male students										
65% read Commerce	40% read Science										
20% of female students read Science	50% of male students read Commerce										
3000 total No. of students	3600 total No. of students.										
2.	In a study relating to the labourers of a jute mill in West Bengal, the following information was collected. 'Twenty per cent of the total employees were females and forty per cent of them were married. Thirty female workers were not members of Trade Union. Compared to this, out of 600 male workers 500										

	were members of Trade Union and fifty per cent of the male workers were married. The unmarried non-member male employees were 60 which formed ten per cent of the total male employees. The unmarried non-members of the employees were 80'. On the basis of this information, the ratio of married male non-members to the married female non- members is (a) 1.03 (b) 3.01 (c) 4.01 (d) 5.01 Ans : (c)																																																		
	[SM, MTP May 22]																																																		
3.	The weight of 50 students in pounds are given below : <table> <tr><td>82,</td><td>95,</td><td>120,</td><td>174,</td><td>179,</td><td>176,</td><td>159,</td><td>91,</td><td>85,</td><td>175</td></tr> <tr><td>88,</td><td>160,</td><td>97,</td><td>133,</td><td>159,</td><td>176,</td><td>151,</td><td>115,</td><td>105,</td><td>172</td></tr> <tr><td>170,</td><td>128,</td><td>112,</td><td>101,</td><td>123,</td><td>117,</td><td>93,</td><td>117,</td><td>99,</td><td>90</td></tr> <tr><td>113,</td><td>119,</td><td>129,</td><td>134,</td><td>178,</td><td>105,</td><td>147,</td><td>107,</td><td>155,</td><td>157</td></tr> <tr><td>98,</td><td>117,</td><td>95,</td><td>135,</td><td>175,</td><td>97,</td><td>160,</td><td>168,</td><td>144,</td><td>175</td></tr> </table> If the data are arranged in the form of a frequency distribution with class intervals as 81-100, 101-120, 121-140, 141-160 and 161-180, then the frequencies for these 5 class intervals are (a) 6, 9, 10, 11, 14 (b) 12, 8, 7, 11, 12 (c) 10, 12, 8, 11, 9 (d) 12, 12, 6, 9, 11 Ans : (d)	82,	95,	120,	174,	179,	176,	159,	91,	85,	175	88,	160,	97,	133,	159,	176,	151,	115,	105,	172	170,	128,	112,	101,	123,	117,	93,	117,	99,	90	113,	119,	129,	134,	178,	105,	147,	107,	155,	157	98,	117,	95,	135,	175,	97,	160,	168,	144,	175
82,	95,	120,	174,	179,	176,	159,	91,	85,	175																																										
88,	160,	97,	133,	159,	176,	151,	115,	105,	172																																										
170,	128,	112,	101,	123,	117,	93,	117,	99,	90																																										
113,	119,	129,	134,	178,	105,	147,	107,	155,	157																																										
98,	117,	95,	135,	175,	97,	160,	168,	144,	175																																										
4.	The following data relate to the marks of 48 students in statistics : <table> <tr><td>56,</td><td>10,</td><td>54,</td><td>38,</td><td>21,</td><td>43,</td><td>12,</td><td>22</td></tr> <tr><td>48,</td><td>51,</td><td>39,</td><td>26,</td><td>12,</td><td>17,</td><td>36,</td><td>19</td></tr> <tr><td>48,</td><td>36,</td><td>15,</td><td>33,</td><td>30,</td><td>62,</td><td>57,</td><td>17</td></tr> <tr><td>5,</td><td>17,</td><td>45,</td><td>46,</td><td>43,</td><td>55,</td><td>57,</td><td>38</td></tr> <tr><td>43,</td><td>28,</td><td>32,</td><td>35,</td><td>54,</td><td>27,</td><td>17,</td><td>16</td></tr> <tr><td>11,</td><td>43,</td><td>45,</td><td>2,</td><td>16,</td><td>46,</td><td>28,</td><td>45</td></tr> </table> What are the frequency densities for the class intervals 30-39, 40-49 and 50-59 (a) 0.20, 0.50, 0.90 (b) 0.70, 0.90, 1.10 (c) 0.1875, 0.1667, 0.2083 (d) 0.90, 1.1, 0.7 Ans : (d)	56,	10,	54,	38,	21,	43,	12,	22	48,	51,	39,	26,	12,	17,	36,	19	48,	36,	15,	33,	30,	62,	57,	17	5,	17,	45,	46,	43,	55,	57,	38	43,	28,	32,	35,	54,	27,	17,	16	11,	43,	45,	2,	16,	46,	28,	45		
56,	10,	54,	38,	21,	43,	12,	22																																												
48,	51,	39,	26,	12,	17,	36,	19																																												
48,	36,	15,	33,	30,	62,	57,	17																																												
5,	17,	45,	46,	43,	55,	57,	38																																												
43,	28,	32,	35,	54,	27,	17,	16																																												
11,	43,	45,	2,	16,	46,	28,	45																																												
5.	The following information relates to the age of death of 50 persons in an area : <table> <tr><td>36,</td><td>48,</td><td>50,</td><td>45,</td><td>49,</td><td>31,</td><td>50,</td><td>48,</td><td>42,</td><td>57</td></tr> <tr><td>43,</td><td>40,</td><td>32,</td><td>41,</td><td>39,</td><td>39,</td><td>43,</td><td>47,</td><td>45,</td><td>52</td></tr> <tr><td>47,</td><td>48,</td><td>53,</td><td>37,</td><td>48,</td><td>50,</td><td>41,</td><td>49,</td><td>50,</td><td>53</td></tr> <tr><td>38,</td><td>41,</td><td>49,</td><td>45,</td><td>36,</td><td>39,</td><td>31,</td><td>48,</td><td>59,</td><td>48</td></tr> <tr><td>37,</td><td>49,</td><td>53,</td><td>51,</td><td>54,</td><td>59,</td><td>48,</td><td>38,</td><td>39,</td><td>45</td></tr> </table> If the class intervals are 31-33, 34-36, 37-39, ... Then the percentage frequencies for the last five class intervals are (a) 18, 18, 10, 2 and 4. (b) 10, 15, 18, 4 and 2. (c) 14, 18, 20, 10 and 2. (d) 10, 12, 16, 4 and 6. Ans : (a)	36,	48,	50,	45,	49,	31,	50,	48,	42,	57	43,	40,	32,	41,	39,	39,	43,	47,	45,	52	47,	48,	53,	37,	48,	50,	41,	49,	50,	53	38,	41,	49,	45,	36,	39,	31,	48,	59,	48	37,	49,	53,	51,	54,	59,	48,	38,	39,	45
36,	48,	50,	45,	49,	31,	50,	48,	42,	57																																										
43,	40,	32,	41,	39,	39,	43,	47,	45,	52																																										
47,	48,	53,	37,	48,	50,	41,	49,	50,	53																																										
38,	41,	49,	45,	36,	39,	31,	48,	59,	48																																										
37,	49,	53,	51,	54,	59,	48,	38,	39,	45																																										

Additional Question Bank

1.	Graph is a (a) Line diagram (b) Bar diagram (c) Pie diagram (d) Pictogram Ans : (a)	(c) both (d) none Ans : (a)
2.	Details are shown by (a) Charts (b) Tabular presentation (c) both (d) none Ans : (b)	9. Tally marks determines (a) class width (b) class boundary (c) class limit (d) class frequency Ans : (d)
3.	The relationship between two variables are shown in (a) Pictogram (b) Histogram (c) Bar diagram (d) Line diagram Ans : (d)	10. Cumulative Frequency Distribution is a (a) graph (b) frequency (c) Statistical Table (d) distribution Ans : (c)
4.	In general the number of types of tabulation are (a) two (b) three (c) one (d) four Ans : (a)	11. To find the number of observations less than any given value (a) Single frequency distribution (b) Grouped frequency distribution (c) Cumulative frequency distribution (d) None is used. Ans : (c)
5.	A table has (a) four (b) two (c) five (d) none parts. Ans : (c) [SM, MTP Dec 24]	12. An area diagram is (a) Histogram (b) Frequency Polygon (c) Ogive (d) none Ans : (a)
6.	The number of errors in Statistics are (a) one (b) two (c) three (d) four Ans : (b)	13. When all classes have a common width (a) Pie Chart (b) Frequency Polygon (c) both (d) none is used. Ans : (b)
7.	The number of "Frequency distribution" is (a) two (b) one (c) five (d) four Ans : (a)	14. An approximate idea of the shape of frequency curve is given by (a) Ogive (b) Frequency Polygon (c) both (d) none Ans : (b)
8.	(Class frequency)/(Width of the class) is defined as (a) Frequency density (b) Frequency distribution	15. Ogive is a (a) Line diagram (b) Bar diagram (c) both (d) none Ans : (a)
		16. Unequal widths of classes in the frequency distribution do not cause any difficulty in the

	construction of (a) Ogive (b) Frequency Polygon (c) Histogram (d) none Ans : (c)
17.	The graphical representation of a cumulative frequency distribution is called (a) Histogram (b) Ogive (c) both (d) none. Ans : (b) [SM, MTP May 21, Dec 24]
18.	An Ogive is a graphical representation of: (a) Cumulative Frequency distribution (b) Ungrouped Data (c) A frequency distribution (d) None of the above Ans : (a) [MTP Nov 22]
19.	The most common form of diagrammatic representation of a grouped frequency distribution is (a) Ogive (b) Histogram (c) Frequency Polygon (d) none Ans : (b)
20.	Vertical bar chart may appear somewhat alike (a) Histogram (b) Frequency Polygon (c) both (d) none Ans : (a)
21.	The number of types of cumulative frequency is (a) one (b) two (c) three (d) four Ans : (b)
22.	A representative value of the class interval for the calculation of mean, standard deviation, mean deviation etc. is (a) class interval (b) class limit (c) class mark (d) none Ans : (c)

23.	The number of observations falling within a class is called (a) density (b) frequency (c) both (d) none Ans : (b)
24.	Classes with zero frequencies are called (a) null class (b) empty class (c) class (d) none Ans : (b)
25.	For determining the class frequencies it is necessary that these classes are (a) mutually exclusive (b) not mutually exclusive (c) independent (d) none Ans : (a)
26.	Most extreme values which would ever be included in a class interval are called (a) class limits (b) class interval (c) class boundaries (d) none Ans : (c)
27.	The value exactly at the middle of a class interval is called (a) class mark (b) mid value (c) both (d) none Ans : (c)
28.	Difference between the lower and the upper class boundaries is (a) width (b) size (c) both (d) none Ans : (c)
29.	In the construction of a frequency distribution, it is generally preferable to have classes of (a) equal width (b) unequal width (c) maximum (d) none Ans : (a)
30.	Frequency density is used in the construction

	of (a) Histogram (b) Ogive (c) Frequency Polygon (d) none when the classes are of unequal width. Ans : (a) [SM, MTP Nov 19]		
31.	"Cumulative Frequency" only refers to the (a) less-than type (b) more-than type (c) both (d) none Ans : (a)	37.	The lower extreme point of a class is called (a) lower class limit (b) lower class boundary (c) both (d) none Ans : (b)
32.	For the construction of a grouped frequency distribution (a) class boundaries (b) class limits (c) both (d) none are used. Ans : (b)	38.	For the construction of grouped frequency distribution from ungrouped data we use (a) class limits (b) class boundaries (c) class width (d) none Ans : (a)
33.	In all Statistical calculations and diagrams involving end points of classes (a) class boundaries (b) class value (c) both (d) none are used. Ans : (a)	39.	When one end of a class is not specified, the class is called (a) closed- end class (b) open- end class (c) both (d) none Ans : (b)
34.	Upper limit of any class is from the lower limit of the next class (a) same (b) different (c) both (d) none Ans : (b)	40.	Class boundaries should be considered to be the real limits for the class interval. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
35.	Upper boundary of any class coincides with the Lower boundary of the next class. (a) TRUE (b) FALSE (c) both (d) none. Ans : (a)	41.	Difference between the maximum & minimum value of a given data is called (a) width (b) size (c) range (d) none Ans : (c)
36.	Excepting the first and the last, all other class boundaries lie midway between the upper limit of a class and the lower limit of the next higher class. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)	42.	In Histogram if the classes are of unequal width then the heights of the rectangles must be proportional to the frequency densities. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
		43.	When all classes have equal width, the heights of the rectangles in Histogram will be numerically equal to the (a) class frequencies (b) class boundaries (c) both (d) none Ans : (a)
		44.	Consecutive rectangles in a Histogram have no

	space in between (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
45.	Histogram emphasizes the widths of rectangles between the class boundaries. (a) FALSE (b) TRUE (c) both (d) none Ans : (b)
46.	To find the mode graphically (a) Ogive (b) Frequency Polygon (c) Histogram (d) none may be used. Ans : (c)
47.	When the width of all classes is same, frequency polygon has not the same area as the Histogram. (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
48.	For obtaining frequency polygon we join the successive points whose abscissa represent the corresponding class frequency (a) TRUE (b) FALSE (c) Both (d) None Ans : (b)
49.	In representing simple frequency distributions of a discrete variable (a) Ogive (b) Histogram (c) Frequency Polygon (d) both is useful. Ans : (c)
50.	Diagrammatic representation of the cumulative frequency distribution is (a) Frequency Polygon (b) Ogive (c) Histogram (d) none Ans : (b)
51.	For the overlapping classes 0-10 , 10-20 , 20-

	30 etc. the class mark of the class 0-10 is (a) 5 (b) 0 (c) 10 (d) none Ans : (a)
52.	For the non-overlapping classes 0-19 , 20-39 , 40-59 the class mark of the class 0-19 is (a) 0 (b) 19 (c) 9.5 (d) none Ans : (c) [SM, MTP May 22]
53.	Class: 0-10 10-20 20-30 30-40 40-50 Frequency: 5 8 15 6 4 For the class 20-30 , cumulative frequency is (a) 20 (b) 13 (c) 15 (d) 28 Ans : (d) [SM, MTP Nov 22]
54.	An Ogive can be prepared in different ways. (a) 2 (b) 3 (c) 4 (d) none Ans : (a) [SM, MTP May 24]
55.	The curve obtained by joining the points, whose x- coordinates are the upper limits of the class-intervals and y coordinates are corresponding cumulative frequencies is called (a) Ogive (b) Histogram (c) Frequency Polygon (d) Frequency Curve Ans : (a) [SM, MTP Nov 21]
56.	The breadth of the rectangle is equal to the length of the class-interval in (a) Ogive (b) Histogram (c) both (d) none Ans : (b)
57.	In Histogram, the classes are taken (a) overlapping (b) non-overlapping

	(c) both (d) none Ans : (a)
58.	For overlapping class-intervals the class limit & class boundary are (a) same (b) not same (c) zero (d) none Ans : (a)
59.	Data classification is of kinds (a) four (b) Three (c) two (d) five Ans : (a)
60.	Frequency Polygon is meant for ----- frequency distribution (a) Single (b) Double

	(c) Multi (d) None of the above Ans : (a) [MTP Nov 18]
61.	Ogive graph is used for finding: (a) Quartiles (b) Deciles (c) Median (d) All of these Ans : (d) [MTP Nov 22]

Unit 2: Sampling Exercise

1.	Sampling can be described as a statistical procedure (a) To infer about the unknown universe from a knowledge of any sample (b) To infer about the known universe from a knowledge of a sample drawn from it (c) To infer about the unknown universe from a knowledge of a random sample drawn from it (d) Both (a) and (b). Ans : (c)
2.	The Law of Statistical Regularity says that (a) Sample drawn from the population under discussion possesses the characteristics of the population (b) A large sample drawn at random from the population would possess the characteristics of the population (c) A large sample drawn at random from the population would possess the characteristics of the population on an average (d) An optimum level of efficiency can be attained at a minimum cost. Ans : (c)
3.	A sample survey is prone to

	(a) Sampling errors (b) Non-sampling errors (c) Either (a) or (b) (d) Both (a) and (b) Ans : (d)
4.	The population of roses in Salt Lake City is an example of (a) A finite population (b) An infinite population (c) A hypothetical population (d) An imaginary population. Ans : (b)
5.	Statistical decision about an unknown universe is taken on the basis of (a) Sample observations (b) A sampling frame (c) Sample survey (d) Complete enumeration Ans : (a)
6.	Random sampling implies (a) Haphazard sampling (b) Probability sampling (c) Systematic sampling (d) Sampling with the same probability for each unit. Ans : (d)

7.	A parameter is a characteristic of (a) Population (b) Sample (c) Both (a) and (b) (d) (a) or (b) Ans : (a) [SM, MTP April 24]
8.	A statistic is (a) A function of sample observations (b) A function of population units (c) A characteristic of a population (d) A part of a population. Ans : (a)
9.	Sampling Fluctuations may be described as (a) The variation in the values of a statistic (b) The variation in the values of a sample (c) The differences in the values of a parameter (d) The variation in the values of observations. Ans : (a)
10.	The sampling distribution is (a) The distribution of sample observations (b) The distribution of random samples (c) The distribution of a parameter (d) The probability distribution of a statistic. Ans : (d)
11.	Standard error can be described as (a) The error committed in sampling (b) The error committed in sample survey (c) The error committed in estimating a parameter (d) Standard deviation of a statistic. Ans : (d) [SM, MTP Jan 25]
12.	A measure of precision obtained by sampling is given by (a) Standard error (b) Sampling fluctuation (c) Sampling distribution (d) Expectation. Ans : (a)
13.	As the sample size increases, standard error (a) Increases (b) Decreases (c) Remains constant (d) Decreases proportionately.

	Ans : (b) [SM, MTP Dec 24]
14.	If from a population with 25 members, a random sample without replacement of 2 members is taken, the number of all such samples is (a) 300 (b) 625 (c) 50 (d) 600 Ans : (a)
15.	A population comprises 5 members. The number of all possible samples of size 2 that can be drawn from it with replacement is (a) 100 (b) 15 (c) 125 (d) 25 Ans : (d)
16.	Simple random sampling is very effective if (a) The population is not very large (b) The population is not much heterogeneous (c) The population is partitioned into several sections. (d) Both (a) and (b) Ans : (b)
17.	Simple random sampling is (a) A probabilistic sampling (b) A non- probabilistic sampling (c) A mixed sampling (d) Both (b) and (c). Ans : (a)
18.	According to Neyman's allocation, in stratified sampling (a) Sample size is proportional to the population size (b) Sample size is proportional to the sample SD (c) Sample size is proportional to the sample variance (d) Population size is proportional to the sample variance. Ans : (a)
19.	Which sampling provides separate estimates for population means for different segments and also an over all estimate? (a) Multistage sampling (b) Stratified sampling (c) Simple random sampling

	(d) Systematic sampling Ans : (b)
20.	Which sampling adds flexibility to the sampling process? (a) Simple random sampling (b) Multistage sampling (c) Stratified sampling (d) Systematic sampling Ans : (d)
21.	Which sampling is affected most if the sampling frame contains an undetected periodicity? (a) Simple random sampling (b) Stratified sampling (c) Multistage sampling (d) Systematic sampling Ans : (d)
22.	Which sampling is subjected to the discretion of the sampler? (a) Systematic sampling (b) Simple random sampling (c) Purposive sampling (d) Quota sampling. Ans : (c)
23.	If a random sample of size 2 with replacement is taken from the population containing the units 3,6 and 1, then the samples would be (a) (3,6),(3,1),(6,1) (b) (3,3),(6,6),(1,1) (c) (3,3),(3,6),(3,1),(6,6),(6,3),(6,1),(1,1),(1,3),(1,6) (d) (1,1),(1,3),(1,6),(6,1),(6,2),(6,3),(6,6),(1,6),(1,1) Ans : (c)
24.	If a random sample of size two is taken without replacement from a population containing the units a,b,c and d then the possible samples are (a) (a, b),(a, c),(a, d) (b) (a, b),(b, c), (c, d) (c) (a, b), (b, a), (a, c),(c,a), (a, d), (d, a) (d) (a, b), (a, c), (a, d), (b, c), (b, d), (c,d) Ans : (d)
25.	The difference between Upper limit and lower limit of a class is called (a) Class Interval (b) Class boundaries (c) Mid-Value (d) Frequency Ans : (a) [MTP May 20, May 21, Jan 25]

26.	The distribution of income is an example of frequency distribution of (a) Continuous variable (b) A discrete variable (c) An attribute (d) (b) or (c) Ans : (a) [MTP Nov 20]
27.	The most appropriate diagram to represent the diagram to represent the data relating to the monthly expenditure on different items by a family is ? (a) Histogram (b) Pie-diagram (c) Frequency polygon (d) Line graph Ans : (b) [MTP Nov 20]
28.	Mid values are also called (a) Lower limit (b) Upper limit (c) Class mark (d) None Ans : (c) [MTP Nov 18]
29.	For frequency distribution and time series which from the presentation is rarely used. (a) Diagrammatic presentation (b) Graphic (c) both Diagrammatic and Graphic (d) More information required Ans : (a) [MTP Nov 18]
30	The number of times a particular item occurs in a given data is called its (a) Variation (b) Frequency (c) Cumulative frequency (d) None of these Ans: (b) [MTP Nov 19, Nov 22, May 24]
31	Data are said to be _____ if the investigator himself is responsible for the collection of data. (a) Primary Data (b) Secondary Data (c) Mixed of Primary and Secondary Data (d) None of these Ans : a [MTP May 22, Nov 22, May 24]
32	Out of these, which is not a probability

	sampling? (a) cluster sampling (b) stratified sampling (c) quota sampling (d) simple random sampling Ans : C [MTP Dec 24]										
33	The column headings of a table are known as: (a) Body (b) Stub (c) Box-head (d) Caption Ans : C [MTP Dec 24]										
34	From the following data 73, 72, 65, 41, 54, 80, 50, 46, 49, 53, find the number of class intervals if class length is given as 5, (a) 6 (b) 5 (c) 7 (d) 8 Ans : (d) [MTP April 24]										
35	The number of observations between 150 and 200 based on the following data is: <table border="1"> <thead> <tr> <th>Value</th><th>No. of observations</th></tr> </thead> <tbody> <tr> <td>More than 100</td><td>70</td></tr> <tr> <td>More than 150</td><td>63</td></tr> <tr> <td>More than 200</td><td>28</td></tr> <tr> <td>More than 250</td><td>05</td></tr> </tbody> </table> (a) 46 (b) 35 (c) 28 (d) 23 Ans : (b) [MTP April 24]	Value	No. of observations	More than 100	70	More than 150	63	More than 200	28	More than 250	05
Value	No. of observations										
More than 100	70										
More than 150	63										
More than 200	28										
More than 250	05										
36	Histogram is used for presentation of the following type of series (a) Time Service (b) Continuous Frequency Series (c) Discrete Series (d) Individual Series Ans : (b) [MTP May 21]										
37	A student marks in five subjects S1, S2, S3, S4 and S5 are 86, 79, 90, 88 and 89 . If we need to draw a pie chart to represent these marks, what will be central angle for S3. (a) 103.2° (b) 75°										

	(c) 105.6° (d) 94.8° Ans : B [MTP Nov 23]
38	In a graphical representation of data , the largest numerical value is 45 the smallest numerical value is 25. If classes desired are 4 then which class interval is (a) 45 (b) 5 (c) 20 (d) 7.5 Ans : B [MTP Nov 23, July 24]
39	Census report are used as source of data. (a) Secondary (b) Primary (c) Organize (d) Confidential Ans : A [MTP Nov 23]
40	When data are classified according one criterion, then it is called ____ classification (a) quantitative (b) qualitative (c) Simple (d) Factored Ans : C [MTP Nov 23]
41	A tabular presentation Can be Used for (a) Continuous data (b) Nominal data (c) Time Series data (d) Comparing different components Ans : D [MTP Nov 23]
42	100 students are classified into male/female and graduate/non-graduate classes. This data classification is (a) Cardinal data (b) Ordinal data (c) Spatial Series data (d) Temporal data Ans : B [MTP Dec 23]
43	Which of the following is not an example of continuous variable? (a) Temperature in India (b) Profit of Company X (c) Number of road accidents

	(d) A person's height Ans : (c) [MTP Nov 21]
44	Which of the following is not a criteria for ideal measure of central tendency? (a) It should be ambiguously defined (b) It should be simple to compute (c) It should be based on all the observations (d) None of these Ans : (a) [MTP Nov 21]
45	Ogive is used to find (a) Mean (b) Median (c) Mode (d) Range Ans: (b) [RTP May 25]
46	A population comprises 7 members. The number of all possible samples of size 3 that can be drawn from it with replacement is (a) 216 (b) 343 (c) 21 (d) 125 Ans: (b) [RTP May 25]
47	Find the Harmonic Mean of 2,4 & 6. (a) 3.30 (b) 3.00 (c) 3.75 (d) 4.00 Ans: (a) [RTP May 25]
48	Standard Error (SE) and square root of sample size are (a) Directly proportional (b) Equal (c) Inversely proportional (d) Not equal Ans: (c) [RTP May 25]
49	Which of the following is not a type of sampling? (a) Probability (b) Non- Probability (c) Stand-alone (d) Mixed Ans : (c) [MTP July 24]
50	The Mean of a set of 20 observations on 18.3.

	The mean is reduced by 0.6 when a new observation is added to the set. The new observation is: (a) 17.6 (b) 18.0 (c) 5.7 (d) 24.6 Ans : (c) [MTP July 24]
51	The following set of data cannot be presented in a table (a) The heights of students described in centimetres (b) The weights of candidates expressed in kilograms (c) The amount of rainfall opined as "medium", "average", "heavy", etc. (d) The number of bills per day cleared by an auditor in a month Ans : (c) [MTP July 24]
52	Histogram is useful to determine graphically the value of (a) Arithmetic Mean (b) Median (c) Mode (d) HM Ans.(c) [MTP1 and 2 May 22, Nov 22, July 24, RTP Sep 24]
53	series is continuous. (a) Open ended (b) Exclusive (c) Close ended (d) Unequal Class Intervals Ans : (b) [MTP Nov 22]
54	Histogram can be shown as: (a) Ellipse (b) Rectangle (c) Hyperbola (d) Circle Ans : (b) [MTP Nov 22]
55	A suitable graph for representing the portioning of total into sub parts in statistics is: (a) A Pictograph (b) A Pie Chart (c) An Ogive (d) A Histogram

	Ans : (b) [MTP Nov 22, May 24]
56	The graphical representation of Median is calculated : (a) Ogive Curve (b) Frequency Curve (c) Line diagram (d) Histogram

	Ans : A [MTP Dec 23]

CHAPTER 14: MEASURES OF CENTRAL TENDENCY AND DISPERSION

Unit I

SET A

1.	Measures of central tendency for a given set of observations measures (a) The scatterness of the observations (b) The central location of the observations (c) Both (a) and (b) (d) None of these. Ans : (b)
2.	While computing the AM from a grouped frequency distribution, we assume that (a) The classes are of equal length (b) The classes have equal frequency (c) All the values of a class are equal to the mid-value of that class (d) None of these. Ans : (c)
3.	Which of the following statements is wrong? (a) Mean is rigidly defined (b) Mean is not affected due to sampling fluctuations (c) Mean has some mathematical properties (d) All these Ans : (b)
4.	Which of the following statements is true? (a) Usually mean is the best measure of central tendency (b) Usually median is the best measure of central tendency (c) Usually mode is the best measure of central tendency (d) Normally GM is the best measure of central tendency Ans : (a) [SM, MTP May 21]
5.	For open-end classification, which of the following is the best measure of central tendency? (a) AM (b) GM (c) Median (d) Mode Ans : (c)

	[MTP May 20, Nov 19, May 19, May 22, Jan 25, RTP May 25, Sep 24]
6.	The presence of extreme observations does not affect (a) AM (b) Median (c) Mode (d) Any of these. Ans : (b) [SM, MTP Nov 19, May 19]
7.	In case of an even number of observations which of the following is median? (a) Any of the two middle-most value (b) The simple average of these two middle values (c) The weighted average of these two middle values (d) Any of these Ans : (b) [MTP May 20, Jan 25]
8.	The most commonly used measure of central tendency is (a) AM (b) Median (c) Mode (d) Both GM and HM. Ans : (a)
9.	Which one of the following is not uniquely defined? (a) Mean (b) Median (c) Mode (d) All of these measures Ans : (c)
10.	Which of the following measure of the central tendency is difficult to compute? (a) Mean (b) Median (c) Mode (d) GM Ans : (d)

11.	Which measure(s) of central tendency is(are) considered for finding the average rates? (a) AM (b) GM (c) HM (d) Both (b) and (c) Ans : (d)
12.	For a moderately skewed distribution, which of the following relationship holds? (a) Mean - Mode = 3 (Mean - Median) (b) Median - Mode = 3 (Mean - Median) (c) Mean - Median = 3 (Mean - Mode) (d) Mean - Median = 3 (Median - Mode) Ans : (a) [SM, MTP 1 and 2 May 19, Nov 18, May 20, June 23, Dec 23, Dec 24, April 24]
13.	Weighted averages are considered when (a) The data are not classified (b) The data are put in the form of grouped frequency distribution (c) All the observations are not of equal importance (d) Both (a) and (c). Ans : (b)
14.	Which of the following results hold for a set of distinct positive observations? (a) $AM \geq GM \geq HM$ (b) $HM \geq GM \geq AM$ (c) $AM > GM > HM$ (d) $GM > AM > HM$ Ans : (c) [SM, MTP May 19, May 24]
15.	When a firm registers both profits and losses, which of the following measure of central tendency cannot be considered? (a) AM (b) GM (c) Median (d) Mode

	Ans : (b)
16.	Quartiles are the values dividing a given set of observations into (a) Two equal parts (b) Four equal parts (c) Five equal parts (d) None of these Ans : (b) [SM, MTP May 19]
17.	Quartiles can be determined graphically using (a) Histogram (b) Frequency Polygon (c) Ogive (d) Pie chart. Ans : (c) [SM, MTP May 19]
18.	Which of the following measure(s) possesses (possess) mathematical properties? (a) AM (b) GM (c) HM (d) All of these Ans : (d)
19.	Which of the following measure(s) satisfies (satisfy) a linear relationship between two variables? (a) Mean (b) Median (c) Mode (d) All of these Ans : (d)
20.	Which of the following measures of central tendency is based on only fifty percent of the central values? (a) Mean (b) Median (c) Mode (d) Both (a) and (b) Ans : (b)

SET B

1.	If there are 3 observations 15, 20, 25 then the sum of deviation of the observations from their AM is (a) 0 (b) 5 (c) -5 (d) None of these. Ans : (a) [SM, MTP May 19, May 22]
2.	What is the median for the following

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	observations? 5, 8, 6, 9, 11, 4. (a) 6 (b) 7 (c) 8 (d) None of these Ans : (b)
3.	What is the modal value for the numbers 5, 8, 6, 4, 10, 15, 18, 10? (a) 18 (b) 10

	(c) 14 (d) None of these Ans : (b)
4.	What is the GM for the numbers 8, 24 and 40? (a) 24 (b) 12 (c) $8 \times \sqrt[3]{15}$ (d) 10 Ans : (c)
5.	The harmonic mean for the numbers 2, 3, 5 is (a) 2.00 (b) 3.33 (c) 2.90 (d) $-\sqrt[3]{30}$ Ans : (c)
6.	If the AM and GM for two numbers are 6.50 and 6 respectively then the two numbers are (a) 6 and 7 (b) 9 and 4 (c) 10 and 3 (d) 8 and 5. Ans : (b)
7.	If the AM and HM for two numbers are 5 and 3.2 respectively then the GM will be (a) 16.00 (b) 4.10 (c) 4.05 (d) 4.00 Ans : (d) [SM, MTP1 and 2, May 21]
8.	What is the value of the first quartile for observations 15, 18, 10, 20, 23, 28, 12, 16? (a) 17 (b) 16 (c) 12.75 (d) 12 Ans : (c) [SM, MTP May 19, May 21]
9.	The third decile for the numbers 15, 10, 20, 25, 18, 11, 9, 12 is (a) 13 (b) 10.70 (c) 11 (d) 11.50 Ans : (b) [SM, MTP May 19, Nov 23, July 24]
10.	If there are two groups containing 30 and 20 observations and having 50 and 60 as arithmetic means, then the combined arithmetic mean is

	(a) 55 (b) 56 (c) 54 (d) 52 Ans : (c)
11.	The average salary of a group of unskilled workers is Rs 10,000 and that of a group of skilled workers is Rs 15,000. If the combined salary is Rs 12,000, then what is the percentage of skilled workers? (a) 40% (b) 50% (c) 60% (d) none of these Ans : (a)
12.	If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observation then the combined HM is given by (a) 65 (b) 70.36 (c) 70 (d) 71 Ans : (c) [Check answer] [SM, MTP Nov 20, Nov 21] 70.36
13.	What is the HM of $1\frac{1}{2}$, $\frac{1}{3}$, ... $\frac{1}{n}$? (a) n (b) 2n (c) $2/(n+1)$ (d) $n(n+1)/2$ Ans : (c) [SM, MTP Dec 23]
14.	An aeroplane flies from A to B at the rate of 500 km/hour and comes back from B to A at the rate of 700 km/hour. The average speed of the aeroplane is (a) 600 km. per hour (b) 583.33 km. per hour (c) $100\sqrt{35}$ km.per hour (d) 620 km. per hour. Ans : (b)
15.	If a variable assumes the values 1, 2, 3...5 with frequencies as 1, 2, 3...5, then what is the AM? (a) $11/3$ (b) 5 (c) 4 (d) 4.50

	Ans : (a)
16.	Two variables x and y are given by $y = 2x - 3$. If the median of x is 20, what is the median of y ? (a) 20 (b) 40 (c) 37 (d) 35 Ans : (c) [SM, MTP May 20, Nov 19, Jan 25]
17.	If the relationship between two variables u and v are given by $2u + v + 7 = 0$ and if the AM of u is 10, then the AM of v is (a) 17 (b) -17 (c) -27 (d) 27 Ans : (c) [SM, MTP May 19, May 20]
18.	If x and y are related by $x - y - 10 = 0$ and mode of x is known to be 23, then the mode

	of y is (a) 20 (b) 13 (c) 3 (d) 23 Ans : (b) [SM, MTP May 19, Nov 21] Check answer
19.	If GM of x is 10 and GM of y is 15, then the GM of xy is (a) 150 (b) $\log 10 \times \log 15$ (c) $\log 150$ (d) None of these. Ans : (a)
20.	If the AM and GM for 10 observations are both 15, then the value of HM is (a) Less than 15 (b) More than 15 (c) 15 (d) Can not be determined. Ans : (c)

SET C

1. What is the value of mean and median for the following data:

Marks:	5-14	15-24	25-34	35-44	45-54	55-64
No. of Students:	10	18	32	26	14	10

(a) 30 and 28
 (b) 29 and 30
 (c) 33.68 and 32.94
 (d) 34.21 and 33.18
 Ans : (c)

2. The mean and mode for the following frequency distribution

Class Interval	350-369	370-389	390-409	410-429	430-449	450-469
Frequency	15	27	31	19	13	6

(a) 400 and 390
 (b) 400.58 and 390
 (c) 400.58 and 394.50
 (d) 400 and 394.
 Ans : (c)

3. The median and modal profits for the following data

Profit in 000 Rs.	Below 5	Below 10	Below 15	Below 20	Below 25	Below 30
No. of Firms	10	25	45	55	62	65

Are:

(a) 11.60 and 11.50
 (b) Rs 11556 and Rs 11267
 (c) Rs 11875 and Rs 11667

(d) 11.50 and 11.67.
Ans : (c)

4. Following is an incomplete distribution having modal mark as 44

Marks:	0-20	20-40	40-60	60-80	80-100
No. of Students:	5	18	?	12	5

What would be the mean marks?
(a) 45
(b) 46
(c) 47
(d) 48
Ans : (d)

5. The data relating to the daily wage of 20 workers are shown below:
Rs 50, Rs 55, Rs 60, Rs 58, Rs 59, Rs 72, Rs 65, Rs 68, Rs 53, Rs 50, Rs 67, Rs 58, Rs 63, Rs 69, Rs 74, Rs 63, Rs 61, Rs 57, Rs 62, Rs 64.
The employer pays bonus amounting to Rs 100, Rs 200, Rs 300, Rs 400 and Rs 500 to the wage earners in the wage groups 50-55, 55-60 and so on, and lastly 70-75, during the festive month of October.
What is the average bonus paid per wage earner?
(a) Rs 200
(b) Rs 250
(c) Rs 285
(d) Rs 270
Ans : (c)

6. The third quartile and 65th percentile for the following data are

Profit in '000 Rs.	Less than 10	10-19	20-29	30-39	40-49	50-59
No. of Firms	5	18	38	20	9	2

(a) Rs 33,500 and Rs 29,184
(b) Rs 33,000 and Rs 28,680
(c) Rs 33,600 and Rs 29,000
(d) Rs 33,250 and Rs 29,250.
Ans : (a)

7. For the following incomplete distribution of marks of 100 pupils, median mark is known to be 32.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No. of Students	10	-	25	30	-	10

What is the mean mark?
(a) 32
(b) 31
(c) 31.3
(d) 31.5
Ans : (c)

8. The mode of the following distribution is Rs 66. What would be the median wage?

Daily Wages (Rs.)	30-40	40-50	50-60	60-70	70-80	80-90
No. of workers	8	16	22	28	-	12

(a) Rs 64.00
(b) Rs 64.56
(c) Rs 63.21

(d) Rs 64.25
Ans : (c)

Unit II Dispersion Exercise SET A

1.	Which of the following statements is correct? (a) Two distributions may have identical measures of central tendency and dispersion. (b) Two distributions may have the identical measures of central tendency but different measures of dispersion. (c) Two distributions may have the different measures of central tendency but identical measures of dispersion. (d) All the statements (a), (b) and (c). Ans : (d)
2.	Dispersion measures (a) The scatterness of a set of observations (b) The concentration of a set of observations (c) Both (a) and (b) (d) Neither (a) and (b). Ans : (a)
3.	When it comes to comparing two or more distributions we consider (a) Absolute measures of dispersion (b) Relative measures of dispersion (c) Both (a) and (b) (d) Either (a) or (b). Ans : (B)
4.	Which one is easiest to compute? (a) Relative measures of dispersion (b) Absolute measures of dispersion (c) Both (a) and (b) (d) Range Ans : (D)
5.	Which one is an absolute measure of dispersion? (a) Range (b) Mean Deviation (c) Standard Deviation (d) All these measures Ans : (d)

[SM, MTP May 19, Nov 21, May 24]	
6.	Which measure of dispersion is most usefull? (a) Standard deviation (b) Quartile deviation (c) Mean deviation (d) Range Ans : (a)
7.	Which measures of dispersions is not affected by the presence of extreme observations? (a) Range (b) Mean deviation (c) Standard deviation (d) Quartile deviation Ans : (d) [SM, MTP May 19, Nov 18]
8.	Which measure of dispersion is based on the absolute deviations only? (a) Standard deviation (b) Mean deviation (c) Quartile deviation (d) Range Ans : (B) [SM, MTP Nov 22]
9.	Which measure is based on only the central fifty percent of the observations? (a) Standard deviation (b) Quartile deviation (c) Mean deviation (d) All these measures Ans : (b) [SM, MTP May 19]
10.	Which measure of dispersion is based on all the observations? (a) Mean deviation (b) Standard deviation (c) Quartile Deviation (d) (a) and (b) but not (c) Ans : (d) [SM, MTP Nov 20, May 21]

11.	The appropriate measure of dispersion for open-end classification is (a) Standard deviation (b) Mean deviation (c) Quartile deviation (d) All these measures. Ans : (c) [SM, MTP May 20, Jan 25]
12.	The most commonly used measure of dispersion is (a) Range (b) Standard deviation (c) Coefficient of variation (d) Quartile deviation Ans : (b)
13.	Which measure of dispersion has some desirable mathematical properties? (a) Standard deviation (b) Mean deviation (c) Quartile deviation (d) All these measures Ans : (a)
14.	If the profits of a company remains the same for the last ten months, then the standard deviation of profits for these ten months would be ? (a) Positive (b) Negative (c) Zero (d) (a) or (c) Ans : (c) [SM, MTP May 19, May 21, Nov 22]
15.	Which measure of dispersion is considered for finding a pooled measure of dispersion after combining several groups? (a) Mean deviation (b) Standard deviation (c) Quartile deviation (d) Any of these Ans : (b)
16.	A shift of origin has no impact on (a) Range (b) Mean deviation (c) Standard deviation (d) All these and quartile deviation. Ans : (d) [SM, MTP Nov 20]
17.	The range of 15, 12, 10, 9, 17, 20 is (a) 5 (b) 12 (c) 13

	(d) 11 Ans : (d) [SM, MTP 1 and 2, May 19]
18.	The range of 28, 22, 40, 20, 15, 50 is (a) 40 (b) 22 (c) 35 (d) None of these Ans : (b) [MTP Nov 20]
19.	The standard deviation of 10, 16, 10, 16, 10, 10, 16, 16 is (a) 4 (b) 6 (c) 3 (d) 0 Ans : (c) [SM, MTP May 19, May 21]
20.	For any two numbers SD is always (a) Twice the range (b) Half of the range (c) Square of the range (d) None of these. Ans : (b)
21.	If all the observations are increased by 10, then (a) SD would be increased by 10 (b) Mean deviation would be increased by 10 (c) Quartile deviation would be increased by 10 (d) All these three remain unchanged. Ans : (d)
22.	If all the observations are multiplied by 2, then (a) New SD would be also multiplied by 2 (b) New SD would be half of the previous SD (c) New SD would be increased by 2 (d) New SD would be decreased by 2. Ans : (a) (d) Check answer [SM, MTP May 19]

SET B

1.	What is the coefficient of range for the following wages of 8 workers? Rs 80, Rs 65, Rs 90, Rs 60, Rs 75, Rs 70, Rs 72, Rs 85. (a) Rs 30 (b) Rs 20 (c) 30 (d) 20 Ans : (d)												
2.	If R_x and R_y denote ranges of x and y respectively where x and y are related by $3x+2y+10=0$, what would be the relation between x and y ? (a) $R_x = R_y$ (b) $2 R_x= 3 R_y$ (c) $3 R_x= 2 R_y$ (d) $R_x= 2 R_y$ Ans : (c) [SM, MTP May 20, Jan 25]												
3.	What is the coefficient of range for the following distribution? <table border="1"><tr><td>Class Interval :</td><td>10-19</td><td>20-29</td><td>30-39</td><td>40-49</td><td>50-59</td></tr><tr><td>Frequency:</td><td>11</td><td>25</td><td>16</td><td>7</td><td>3</td></tr></table> (a) 22 (b) 50 (c) 72.46 (d) 75.82 Ans : (c) [SM, MTP1 and 2, May 21]	Class Interval :	10-19	20-29	30-39	40-49	50-59	Frequency:	11	25	16	7	3
Class Interval :	10-19	20-29	30-39	40-49	50-59								
Frequency:	11	25	16	7	3								
4.	If the range of x is 2, what would be the range of $-3x +50$? (a) 2 (b) 6 (c) -6 (d) 44 Ans : (b) [SM, MTP May 18, June 24, May 19]												
5.	What is the value of mean deviation about mean for the following numbers? 5, 8, 6, 3, 4. (a) 5.20 (b) 7.20 (c) 1.44 (d) 2.23 Ans : (c)												
6.	What is the value of mean deviation about mean for the following observations? 50, 60, 50, 50, 60, 60, 60, 50, 50, 50, 60, 60,												

	60, 50. (a) 5 (b) 7 (c) 35 (d) 10 Ans : (a)
7.	The coefficient of mean deviation about mean for the first 9 natural numbers is (a) 200/9 (b) 80 (c) 400/9 (d) 50 Ans : (c)
8.	If the relation between x and y is $5y-3x = 10$ and the mean deviation about mean for x is 12, then the mean deviation of y about mean is (a) 7.20 (b) 6.80 (c) 20 (d) 18.80 Ans : (a) [SM, MTP Nov 20]
9.	If two variables x and y are related by $2x + 3y - 7 = 0$ and the mean and mean deviation about mean of x are 1 and 0.3 respectively, then the coefficient of mean deviation of y about its mean is (a) -5 (b) 12 (c) 50 (d) 4 Ans : (b) [SM, MTP April 24, May 21, May 24]
10.	The mean deviation about mode for the numbers 4/11, 6/11, 8/11, 9/11, 12/11, 8/11 is (a) 1/6 (b) 1/11 (c) 6/11 (d) 5/11. Ans : (a) 68. The mean deviation about mode for the numbers 4/11, 6/11, 8/11, 9/11, 12/11, 8/11 is (a) 9/15 (b) 12 (c) 6/11 (d) 1 Ans : (d) Check answer

	[MTP Nov 20]
11.	What is the standard deviation of 5, 5, 9, 9, 9, 10, 5, 10, 10? (a) $\sqrt{14}$ (b) $\sqrt{42}/3$ (c) 4.50 (d) 8 Ans : (b)
12.	If the mean and SD of x are a and b respectively, then the SD of $\frac{x-a}{b}$ is (a) -1 (b) 1 (c) ab (d) a/b. Ans : (b) [SM, MTP June 24]
13.	What is the coefficient of variation of the following numbers? 53, 52, 61, 60, 64. (a) 8.09 (b) 18.08 (c) 20.23 (d) 20.45 Ans : (a) [SM, MTP Nov 20]
14.	If the SD of x is 3, what is the variance of $(5-2x)^2$? (a) 36 (b) 6 (c) 1 (d) 9 Ans : (a) [SM, MTP Nov 19]
15.	If x and y are related by $2x+3y+4 = 0$ and SD of x is 6, then SD of y is (a) 22 (b) 4 (c) $\sqrt{5}$ (d) 9 Ans : (b) [SM, MTP May 19]
16.	The quartiles of a variable are 45, 52 and 65 respectively. Its quartile deviation is (a) 10 (b) 20 (c) 25 (d) 8.30 Ans : (a) [SM, MTP May 19, May 20, May 22, Jan 25]

17.	If x and y are related as $3x + 4y = 20$ and the quartile deviation of x is 12, then the quartile deviation of y is (a) 16 (b) 14 (c) 10 (d) 9 Ans : (d) [SM, MTP May 20, Nov 18, May 22, Jan 25, April 24, RTP Sep 24]
18.	72. If x and y are related by $2x+3y+4 = 0$ and SD of x is 9, then SD of y is (a) 22 (b) 6 (c) 5 (d) 24 Ans : (b) [MTP May 20, Jan 25]
19.	If the SD of the 1st n natural numbers is 2, then the value of n must be (a) 2 (b) 7 (c) 6 (d) 5 Ans : (b)
20.	If x and y are related by $y = 2x + 5$ and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation of y is (a) 25 (b) 30 (c) 40 (d) 20 Ans : (c) [SM, MTP May 18, May 19, Jan 25, RTP Sep 24]
21.	The mean and SD for a, b and 2 are 3 and $\frac{2}{\sqrt{3}}$ respectively, The value of ab would be (a) 5 (b) 6 (c) 11 (d) 3 Ans : (c)
22.	The mean and SD for a, b, and 2 are 3 and 1 respectively, the value of ab would be (a) 3 (b) 5 (c) 12 (d) 13 Ans : (b)

[MTP Nov 20]	
23.	If the quartile deviation of x is 6 and $3x + 6y = 20$, what is the quartile deviation of y ? (a) 3 (b) 4 (c) 5 (d) 6

Ans : (a)	[MTP Nov 21]

SET C

1

What is the mean deviation about mean for the following distribution?

Variable	5	10	15	20	25	30
Frequency	3	4	6	5	3	2

(a) 6.00
(b) 5.93
(c) 6.07
(d) 7.20
Ans : (c)

2

What is the mean deviation about median for the following data?

X:	3	5	7	9	11	13	15
F:	2	8	9	16	14	7	4

(a) 2.50
(b) 2.46
(c) 2.43
(d) 2.37
Ans : (d)

3

What is the coefficient of mean deviation for the following distribution of heights? Take deviation from AM.

Height in inches:	60-62	63-65	66-68	69-71	72-74
No. of students:	5	22	28	17	3

(a) 2.31 inches
(b) 3.45 inches
(c) 3.82 inches
(d) 2.48 inches
Ans : (a)

4

The mean deviation of weights about median for the following data:

Weight (lbs)	131-140	141-150	151-160	161-170	171-180	181-190
No. of persons	3	8	13	15	6	5

Is given by
(a) 10.97
(b) 8.23
(c) 9.63
(d) 11.45
Ans : (a)

5

What is the standard deviation from the following data relating to the age distribution of 200 persons?

Age (Year)	20	30	40	50	60	70	80
No. of People	13	28	31	46	39	23	20

(a) 15.29
(b) 16.87
(c) 18.00
(d) 17.52

	Ans : (b)																		
6.	What is the coefficient of variation for the following distribution of wages? <table><tr><td>Daily Wages (Rs.)</td><td>30-40</td><td>40-50</td><td>50-60</td><td>60-70</td><td>70-80</td><td>80-90</td></tr><tr><td>No. of workers</td><td>17</td><td>28</td><td>21</td><td>15</td><td>13</td><td>6</td></tr></table> (a) Rs 14.73 (b) 14.73 (c) 26.93 (d) 20.82 Ans : (c)	Daily Wages (Rs.)	30-40	40-50	50-60	60-70	70-80	80-90	No. of workers	17	28	21	15	13	6				
Daily Wages (Rs.)	30-40	40-50	50-60	60-70	70-80	80-90													
No. of workers	17	28	21	15	13	6													
7.	Which of the following companies A and B is more consistent so far as the payment of dividend is concerned ? <table><tr><td>Dividend paid by A</td><td>5</td><td>9</td><td>6</td><td>12</td><td>15</td><td>10</td><td>8</td><td>10</td></tr><tr><td>Dividend paid by B</td><td>4</td><td>8</td><td>7</td><td>15</td><td>18</td><td>9</td><td>6</td><td>6</td></tr></table> (a) A (b) B (c) Both (a) and (d) Neither (a) nor (b) Ans : (a)	Dividend paid by A	5	9	6	12	15	10	8	10	Dividend paid by B	4	8	7	15	18	9	6	6
Dividend paid by A	5	9	6	12	15	10	8	10											
Dividend paid by B	4	8	7	15	18	9	6	6											
8.	The mean and SD for a group of 100 observations are 65 and 7.03 respectively. If 60 of these observations have mean and SD as 70 and 3 respectively, what is the SD for the group comprising 40 observations? (a) 16 (b) 25 (c) 4 (d) 2 Ans : (c)																		
9.	If two samples of sizes 30 and 20 have means as 55 and 60 and variances as 16 and 25 respectively, then what would be the SD of the combined sample of size 50? (a) 5.00 (b) 5.06 (c) 5.23 (d) 5.35 Ans : (b)																		
10.	The mean and SD of a sample of 100 observations were calculated as 40 and 5.1 respectively by a CA student who took one of the observations as 50 instead of 40 by mistake. The current value of SD would be (a) 4.90 (b) 5.00 (c) 4.88 (d) 4.85 Ans : (b)																		
11.	The value of appropriate measure of dispersion for the following distribution of daily wages (a) Rs 11.03 (b) Rs 10.50 (c) 11.68 (d) Rs 11.68. Ans : (a)																		
12.	The mean of 100 observations is 50. If one of the observations which was 50 is replaced by 40, the resulting mean will be: (a) 40																		

	(b) 49.90 (c) 50 (d) none of these Ans : B	[MTP April 23]

ADDITIONAL QUESTION BANK

1.	The number of measures of central tendency is (a) two (b) three (c) four (d) five Ans : (b)	(d) 0 Ans : (d) [SM, MTP July 24]
2.	The words "mean" or "average" only refer to (a) A.M (b) G.M (c) H.M (d) none Ans : (a)	8. The algebraic sum of the deviations of a frequency distribution from its mean is always (a) greater than zero (b) less than zero (c) zero (d) a non-zero number Ans : (c) [MTP Nov 21, Nov 23]
3.	----- is the most stable of all the measures of central tendency. (a) G.M (b) H.M (c) A.M (d) none. Ans : (c)	9. G.M of a set of n observations is the ----- root of their product. (a) $n/2$ th (b) $(n+1)$ th (c) nth (d) $(n-1)$ th Ans : (c)
4.	Mean is of ----- types. (a) 3 (b) 4 (c) 8 (d) 5 Ans : (a)	10. The algebraic sum of deviations of 8, 1, 6 from the A.M viz.5 is (a) -1 (b) 0 (c) 1 (d) none Ans : (b)
5.	Weighted A.M is related to (a) G.M (b) frequency (c) H.M (d) none. Ans : (b)	11. G.M of 8, 4, 2 is (a) 4 (b) 2 (c) 8 (d) none Ans : (a)
6.	Frequencies are also called as weights. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)	12. ----- is the reciprocal of the A.M of reciprocal of observations. (a) H.M (b) G.M (c) both (d) none Ans : (a)
7.	The algebraic sum of deviations of observations from their A.M is (a) 2 (b) -1 (c) 1	13. A.M is never less than G.M (a) TRUE (b) FALSE (c) both

	(d) none Ans : (a)	21.	In formula of median for grouped frequency distribution N is (a) total frequency (b) frequency density (c) frequency (d) cumulative frequency Ans : (a)
14.	G.M is less than H.M (a) TRUE (b) FALSE (c) both (d) none Ans : (b)	22.	When all observations occur with equal frequency ----- does not exit. (a) median (b) mode (c) mean (d) none Ans : (b)
15.	The value of the middlemost item when they are arranged in order of magnitude is called (a) standard deviation (b) mean (c) mode (d) median Ans : (d)	23.	Mode of the observations 2, 5, 8, 4, 3, 4, 4, 5, 2, 4, 4 is (a) 3 (b) 2 (c) 5 (d) 4 Ans : (d)
16.	Median is unaffected by extreme values. (a) TRUE (b) FALSE (c) Both (d) None Ans : (a)	24.	For the observations 5, 3, 6, 3, 5, 10, 7, 2 there are ----- modes. (a) 2 (b) 3 (c) 4 (d) 5 Ans : (a)
17.	Median of 2, 5, 8, 4, 9, 6, 71 is (a) 9 (b) 8 (c) 5 (d) 6 Ans : (d)	25.	----- of a set of observations is defined to be their sum, divided by the no. of observations. (a) H.M (b) G.M (c) A.M (d) none Ans : (c)
18.	The value which occurs with the maximum frequency is called (a) median (b) mode (c) mean (d) none Ans : (b)	26.	Simple average is sometimes called (a) weighted average (b) unweighted average (c) relative average (d) none Ans : (b)
19.	In the formula $\text{Mode} = L_1 + (d_1 \times c) / (d_1 + d_2)$ d_1 is the difference of frequencies in the modal class & the ----- class. (a) preceding (b) following (c) both (d) none Ans : (a)	27.	When a frequency distribution is given, the frequencies themselves treated as weights. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
20.	In the formula $\text{Mode} = L_1 + (d_1 \times c) / (d_1 + d_2)$ d_2 is the difference of frequencies in the modal class & the ----- class. (a) preceding (b) succeeding (c) both (d) none Ans : (b)	28.	Each value is considered only once for (a) simple average

	(b) weighted average (c) both (d) none Ans : (a)		(b) G.M (c) H.M (d) none Ans : (a)
29.	Each value is considered as many times as it occurs for (a) simple average (b) weighted average (c) both (d) none Ans : (b)	36.	The total of the deviations of a set of observations from their A.M is always (a) 0 (b) 1 (c) -1 (d) none Ans : (a)
30.	Multiplying the values of the variable by the corresponding weights and then dividing the sum of products by the sum of weights is (a) simple average (b) weighted average (c) both (d) none Ans : (a)	37.	Deviation may be positive or negative or zero (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
31.	Simple & weighted average are equal only when all the weights are equal. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)	38.	The sum of the squares of deviations of a set of observations has the smallest value, when the deviations are taken from their (a) A.M (b) H.M (c) G.M (d) none Ans : (a) [SM, MTP Nov 18, May 21, April 24]
32.	The word "average " used in "simple average" and "weighted average" generally refers to (a) median (b) mode (c) A.M , G.M or H.M (d) none Ans : (C)	39.	For a given set of positive observations H.M is less than G.M (a) TRUE (b) FALSE (c) Both (d) None Ans : (a)
33.	----- average is obtained on dividing the total of a set of observations by their number (a) simple (b) weighted (c) both (d) none Ans : (a)	40.	For a given set of positive observations A.M is greater than G.M (a) TRUE (b) FALSE (c) Both (d) None Ans : (a)
34.	Frequencies are generally used as (a) range (b) weights (c) mean (d) none Ans : (b)	41.	Calculation of G.M is more difficult than (a) A.M (b) H.M (c) median (d) none Ans : (a)
35.	The total of a set of observations is equal to the product of their number of observations and the (a) A.M	42.	----- has a limited use (a) A.M (b) G.M (c) H.M

	(d) (b) and (c) Ans : (d)		is zero (d) all observations have the different sign and one is zero Ans : (a)
43.	A.M of 8, 1, 6 is (a) 5 (b) 6 (c) 4 (d) none Ans : (a)	50.	----- is useful in averaging ratios, rates and percentages. (a) A.M (b) G.M (c) H.M (d) Both (b) and (c) Ans : (d)
44.	----- can be calculated from a frequency distribution with open end intervals (a) Median (b) Mean (c) Mode (d) none Ans : (a)	51.	G.M is useful in construction of index number. (a) TRUE (b) FALSE (c) Both (d) None Ans : (a)
45.	The values of all items are taken into consideration in the calculation of (a) median (b) mean (c) mode (d) none Ans : (b)	52.	More laborious numerical calculations involves in G.M than A.M (a) TRUE (b) FALSE (c) Both (d) None Ans : (a)
46.	The values of extreme items do not influence the average in case of (a) median (b) mean (c) mode (d) none Ans : (a)	53.	H.M is defined when no observation is (a) 3 (b) 2 (c) 1 (d) 0 Ans : (d)
47.	In a distribution with a single peak and moderate skewness to the right, it is closer to the concentration of the distribution in case of (a) mean (b) median (c) both (d) none Ans : (b)	54.	When all values occur with equal frequency, there is no (a) mode (b) mean (c) median (d) none Ans : (a)
48.	If the variables x & z are so related that $z = ax + b$ for each $x = x_i$ where a & b are constants, then $z = a \bar{x} + b$ (a) TRUE (b) FALSE (c) Both (d) None Ans : (a)	55.	----- cannot be treated algebraically (a) mode (b) mean (c) median (d) Both (a) and (c) Ans : (d)
49.	G.M is defined only when (a) all observations have the same sign and none is zero (b) all observations have the different sign and none is zero (c) all observations have the same sign and one	56.	For the calculation of -----, the data must be arranged in the form of a frequency distribution. (a) Median (b) mode (c) mean (d) none Ans : (b)

57.	----- is equal to the value corresponding to cumulative frequency (a) mode (b) mean (c) median (d) none Ans : (c)		(b) do not coincide (c) both (d) none Ans : (a)
58.	----- is the value of the variable corresponding to the highest frequency (a) mode (b) mean (c) median (d) none Ans : (a)	65.	For a symmetric distribution: (a) Mean = Median = Mode (b) Mode = 3 Median - 2 Mean (c) Mode = $\frac{1}{3}$ Median = $\frac{1}{2}$ Mean (d) None Ans: (a) [RTP Sep 24, MTP Nov 22]
59.	The class in which mode belongs is known as (a) median class (b) mean class (c) modal class (d) none Ans : (c)	66.	Mean, median & mode are equal for the (a) Binomial distribution (b) Normal distribution (c) both (d) none Ans : (b)
60.	The formula of mode is applicable if classes are of ----- width. (a) equal (b) unequal (c) both (d) none Ans : (a)	67.	In most frequency distributions, it has been observed that the three measures of central tendency viz. mean, median & mode, obey the approximate relation, provided the distribution is (a) very skew (b) not very skew (c) both (d) none Ans : (b)
61.	For calculation of ----- we have to construct cumulative frequency distribution (a) mode (b) median (c) mean (d) none Ans : (b)	68.	----- divides the total number of observations into two equal parts. (a) mode (b) mean (c) median (d) none Ans : (c)
62.	For calculation of ----- we have to construct a grouped frequency distribution (a) median (b) mode (c) mean (d) none Ans : (b)	69.	Measures which are used to divide or partition the observations into a fixed number of parts are collectively known as (a) partition values (b) quartiles (c) both (d) none Ans : (a)
63.	Relation between mean, median & mode is (a) mean - mode = 2 (mean - median) (b) mean - median = 3 (mean - mode) (c) mean - median = 2 (mean - mode) (d) mean - mode = 3 (mean - median) Ans : (d)	70.	The middle most value of a set of observations is (a) median (b) mode (c) mean (d) none Ans : (a)
64.	When the distribution is symmetrical, mean, median and mode (a) coincide	71.	The number of observations smaller than -----

	is the same as the number larger than it. (a) median (b) mode (c) mean (d) none Ans : (a)
72.	----- is the value of the variable corresponding to cumulative frequency $N/2$ (a) mode (b) mean (c) median (d) none Ans : (c)
73.	----- divide the total no. observations into 4 equal parts. (a) median (b) deciles (c) quartiles (d) percentiles Ans : (c)
74.	----- quartile is known as Upper quartile (a) First (b) Second (c) Third (d) none Ans : (c)
75.	Lower quartile is (a) first quartile (b) second quartile (c) upper quartile (d) none Ans : (a)
76.	The number of observations smaller than lower quartile is the same as the no. lying between lower and middle quartile. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
77.	----- are used for measuring central tendency, dispersion & skewness. (a) Median (b) Deciles (c) Percentiles (d) Quartiles. Ans : (d)
78.	The second quartile is known as (a) median (b) lower quartile

	(c) upper quartile (d) none Ans : (a)
79.	The lower & upper quartiles are used to define (a) standard deviation (b) quartile deviation (c) both (d) none Ans : (b)
80.	Three quartiles are used in (a) Pearson's formula (b) Bowley's formula (c) both (d) none Ans : (b)
81.	Less than First quartile, the frequency is equal to (a) $N/4$ (b) $3N/4$ (c) $N/2$ (d) none Ans : (a)
82.	Between first & second quartile, the frequency is equal to (a) $3N/4$ (b) $N/2$ (c) $N/4$ (d) none Ans : (c)
83.	Between second & upper quartile, the frequency is equal to (a) $3N/4$ (b) $N/4$ (c) $N/2$ (d) none Ans : (b)
84.	Above upper quartile, the frequency is equal to (a) $N/4$ (b) $N/2$ (c) $3N/4$ (d) none Ans : (a)
85.	Corresponding to first quartile, the cumulative frequency is (a) $N/2$ (b) $N/4$ (c) $3N/4$ (d) none Ans : (b)
86.	Corresponding to second quartile, the cumulative frequency is

	(a) $N/4$ (b) $2N/4$ (c) $3N/4$ (d) none Ans : (b)
87.	Corresponding to upper quartile, the cumulative frequency is (a) $3N/4$ (b) $N/4$ (c) $2N/4$ (d) none Ans : (a)
88.	The values which divide the total number of observations into 10 equal parts are (a) quartiles (b) percentiles (c) deciles (d) none Ans : (c)
89.	There are ----- deciles. (a) 7 (b) 8 (c) 9 (d) 10 Ans : (c)
90.	Corresponding to first decile, the cumulative frequency is (a) $N/10$ (b) $2N/10$ (c) $9N/10$ (d) none Ans : (a)
91.	Fifth decile is equal to (a) mode (b) median (c) mean (d) none Ans : (b)
92.	The values which divide the total number of observations into 100 equal parts is (a) percentiles (b) quartiles (c) deciles (d) none Ans : (a)
93.	Corresponding to second decile, the cumulative frequency is (a) $N/10$ (b) $2N/10$ (c) $5N/10$

	(d) none Ans : (b)
94.	There are ----- percentiles. (a) 100 (b) 98 (c) 97 (d) 99 Ans : (d)
95.	10 th percentile is equal to (a) 1 st decile (b) 10 th decile (c) 9 th decile (d) none Ans : (a)
96.	50 th percentile is known as (a) 50 th decile (b) 50 th quartile (c) mode (d) median Ans : (d)
97.	20 th percentile is equal to (a) 19 th decile (b) 20 th decile (c) 2 nd decile (d) none Ans : (c)
98.	(3 rd quartile — 1 st quartile)/2 is (a) skewness (b) median (c) quartile deviation (d) none Ans : (c)
99.	1 st percentile is less than 2 nd percentile. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
100.	25 th percentile is equal to (a) 1 st quartile (b) 25 th quartile (c) 24 th quartile (d) none Ans : (a)
101.	90 th percentile is equal to (a) 9 th quartile (b) 90 th decile (c) 9 th decile (d) none Ans : (c)

102.	1 st decile is greater than 2 nd decile (a) TRUE (b) FALSE (c) both (d) none Ans : (b)	110.	Rank of k th decile is (a) $(n+1)/2$ (b) $(n+1)/4$ (c) $(n+1)/10$ (d) $k(n+1)/10$ Ans : (d)
103.	Quartile deviation is a measure of dispersion. (a) TRUE (b) FALSE (c) Both (d) None Ans : (a)	111.	Rank of k th percentile is (a) $(n+1)/100$ (b) $k(n+1)/10$ (c) $k(n+1)/100$ (d) none Ans : (c)
104.	To define quartile deviation we use (a) lower & middle quartiles (b) lower & upper quartiles (c) upper & middle quartiles (d) none Ans : (b)	112.	----- is equal to value corresponding to cumulative frequency $(N+1)/2$ from simple frequency distribution (a) Median (b) 1 st quartile (c) 3 rd quartile (d) 4 th quartile Ans : (a)
105.	Calculation of quartiles, deciles, percentiles may be obtained graphically from (a) Frequency Polygon (b) Histogram (c) Ogive (d) none Ans : (c) [SM, MTP Nov 20]	113.	----- is equal to the value corresponding to cumulative frequency $(N+1)/4$ from simple frequency distribution (a) Median (b) 1 st quartile (c) 3 rd quartile (d) 1 st decile Ans : (b)
106.	7 th decile is the abscissa of that point on the Ogive whose ordinate is (a) $7N/10$ (b) $8N/10$ (c) $6N/10$ (d) none Ans : (a)	114.	----- is equal to the value corresponding to cumulative frequency $3(N+1)/4$ from simple frequency distribution (a) Median (b) 1 st quartile (c) 3 rd quartile (d) 1 st decile Ans : (c)
107.	Rank of median is (a) $(n+1)/2$ (b) $(n+1)/4$ (c) $3(n+1)/4$ (d) none Ans : (a)	115.	----- is equal to the value corresponding to cumulative frequency $k(N+1)/10$ from simple frequency distribution (a) Median (b) k th decile (c) k th percentile (d) none Ans : (b)
108.	Rank of 1 st quartile is (a) $(n+1)/2$ (b) $(n+1)/4$ (c) $3(n+1)/4$ (d) none Ans : (b)	116.	----- is equal to the value corresponding to cumulative frequency $k(N+1)/100$ from simple frequency distribution (a) k th decile (b) k th percentile (c) both (d) none
109.	Rank of 3 rd quartile is (a) $3(n+1)/4$ (b) $(n+1)/4$ (c) $(n+1)/2$ (d) none Ans : (a)		

	Ans : (b)
117.	For grouped frequency distribution ----- is equal to the value corresponding to cumulative frequency $N/2$ (a) median (b) 1 st quartile (c) 3 rd quartile (d) none Ans : (a)
118.	For grouped frequency distribution ----- is equal to the value corresponding to cumulative frequency $N/4$ (a) median (b) 1 st quartile (c) 3 rd quartile (d) none Ans : (b)
119.	For grouped frequency distribution ----- is equal to the value corresponding to cumulative frequency $3N/4$ (a) median (b) 1 st quartile (c) 3 rd quartile (d) None Ans : (c)
120.	For grouped frequency distribution ----- is equal to the value corresponding to cumulative frequency $kN/10$ (a) median (b) k th percentile (c) k th decile (d) none Ans : (c)
121.	For grouped frequency distribution ----- is equal to the value corresponding to cumulative frequency $kN/100$ (a) k th quartile (b) k th percentile (c) k th decile (d) none Ans : (b)
122.	120. In Ogive, abscissa corresponding to ordinate $N/2$ is (a) median (b) 1 st quartile (c) 3 rd quartile (d) none Ans : (a)
123.	In Ogive, abscissa corresponding to ordinate $N/4$ is

	(a) median (b) 1 st quartile (c) 3 rd quartile (d) none Ans : (b)
124.	In Ogive, abscissa corresponding to ordinate $3N/4$ is (a) median (b) 3 rd quartile (c) 1 st quartile (d) none Ans : (b)
125.	In Ogive, abscissa corresponding to ordinate ----- is k th decile. (a) $kN/10$ (b) $kN/100$ (c) $kN/50$ (d) none Ans : (a)
126.	In Ogive, abscissa corresponding to ordinate ----- is k th percentile. (a) $kN/10$ (b) $kN/100$ (c) $kN/50$ (d) none Ans : (b)
127.	For 899, 999, 391, 384, 590, 480, 485, 760, 111, 240 Rank of median is (a) 2.75 (b) 5.5 (c) 8.25 (d) none Ans : (b)
128.	For 333, 999, 888, 777, 666, 555, 444 Rank of 1st quartile is (a) 3 (b) 1 (c) 2 (d) 7 Ans : (c)
129.	For 333, 999, 888, 777, 1000, 321, 133 Rank of 3rd quartile is (a) 7 (b) 4 (c) 5 (d) 6 Ans : (d)
130.	Price per kg.(Rs) : 45 50 35; Kgs.Purchased : 100 40 60 Total frequency is

	(a) 300 (b) 100 (c) 150 (d) 200 Ans : (d)		(a) absolute measure (b) relative measure (c) both (d) none Ans : (a)
131.	The length of a rod is measured by a tape 10 times. You are to estimate the length of the rod by averaging these 10 determinations. What is the suitable form of average in this case? (a) A.M (b) G.M (c) H.M (d) none Ans : (a)	137.	Coefficient of variation is (a) absolute measure (b) relative measure (c) both (d) none Ans : (b)
132.	A person purchases 5 rupees worth of eggs from 10 different markets. You are to find the average no. of eggs per rupee for all the markets taken together. What is the suitable form of average in this case? (a) A.M (b) G.M (c) H.M (d) none Ans : (c)	138.	----- deviation is called semi-interquartile range. (a) Percentile (b) Standard (c) Quartile (d) none Ans : (c)
133.	You are given the population of India for the courses of 1981 & 1991. You are to find the population of India at the middle of the period by averaging these population figures, assuming a constant rate of increase of population. What is the suitable form of average in this case? (a) A.M (b) G.M (c) H.M (d) none Ans : (b)	139.	----- Deviation is defined as half the difference between the lower & upper quartiles. (a) Quartile (b) Standard (c) both (d) none Ans : (a)
134.	----- is least affected by sampling fluctuations. (a) Standard deviation (b) Quartile deviation (c) both (d) none Ans : (a)	140.	Quartile Deviation for the data 1, 3, 4, 5, 6, 6, 10 is (a) 3 (b) 1 (c) 6 (d) 1.5 Ans : (d)
135.	"Root -Mean Square Deviation from Mean" is (a) Standard deviation (b) Quartile deviation (c) both (d) none Ans : (a)	141.	Coefficient of Quartile Deviation is (a) $(\text{Quartile Deviation} \times 100) / \text{Median}$ (b) $(\text{Quartile Deviation} \times 100) / \text{Mean}$ (c) $(\text{Quartile Deviation} \times 100) / \text{Mode}$ (d) none Ans : (a)
136.	Standard Deviation is	142.	Mean for the data 6, 4, 1, 6, 5, 10, 3 is (a) 7 (b) 5 (c) 6 (d) none Ans : (b)
		143.	Coefficient of variation = $(\text{Standard Deviation} \times 100) / \text{Mean}$ (a) TRUE (b) FALSE (c) both (d) none

	Ans : (a)
144.	If mean = 5, Standard deviation = 2.6 then the coefficient of variation is (a) 49 (b) 51 (c) 50 (d) 52 Ans : (d)
145.	If median = 5, Quartile deviation = 1.5 then the coefficient of quartile deviation is (a) 33 (b) 35 (c) 30 (d) 20 Ans : (c)
146.	A.M of 2, 6, 4, 1, 8, 5, 2 is (a) 4 (b) 3 (c) 4 (d) none Ans : (c)
147.	Most useful among all measures of dispersion is (a) S.D (b) Q.D (c) Mean deviation (d) none Ans : (a)
148.	For the observations 6, 4, 1, 6, 5, 10, 4, 8 Range is (a) 10 (b) 9 (c) 8 (d) none Ans : (b)
149.	A measure of central tendency tries to estimate the (a) central value (b) lower value (c) upper value (d) none Ans : (a)
150.	Measures of central tendency are known as (a) differences (b) averages (c) both (d) none Ans : (b)
151.	Mean is influenced by extreme values. (a) TRUE (b) FALSE

	(c) both (d) none Ans : (a)												
152.	Mean of 6, 7, 11, 8 is (a) 11 (b) 6 (c) 7 (d) 8 Ans : (d)												
153.	The sum of differences between the actual values and the arithmetic mean is (a) 2 (b) -1 (c) 0 (d) 1 Ans : (c)												
154.	When the algebraic sum of deviations from the arithmetic mean is not equal to zero, the figure of arithmetic mean ----- correct. (a) is (b) is not (c) both (d) none Ans : (b)												
155.	In the problem <table border="1"><tr><td>No. of Shirts</td><td>30-32</td><td>33-35</td><td>36-38</td><td>39-41</td><td>42-44</td></tr><tr><td>No. of persons</td><td>15</td><td>14</td><td>42</td><td>27</td><td>18</td></tr></table> The assumed mean is (a) 34 (b) 37 (c) 40 (d) 43 Ans : (b)	No. of Shirts	30-32	33-35	36-38	39-41	42-44	No. of persons	15	14	42	27	18
No. of Shirts	30-32	33-35	36-38	39-41	42-44								
No. of persons	15	14	42	27	18								
156.	In the problem <table border="1"><tr><td>Size of items</td><td>1-3</td><td>3-8</td><td>8-15</td><td>15-26</td></tr><tr><td>Frequency</td><td>5</td><td>10</td><td>16</td><td>15</td></tr></table> The assumed mean is (a) 20.5 (b) 2 (c) 11.5 (d) 5.5 Ans : (c)	Size of items	1-3	3-8	8-15	15-26	Frequency	5	10	16	15		
Size of items	1-3	3-8	8-15	15-26									
Frequency	5	10	16	15									
157.	The average of a series of overlapping averages, each of which is based on a certain number of item within a series is known as (a) moving average (b) weighted average												

	(c) simple average (d) none Ans : (a)
158.	----- averages is used for smoothening a time series. (a) moving average (b) weighted average (c) simple average (d) none Ans : (a)
159.	Pooled Mean is also called (a) Mean (b) Geometric Mean (c) Grouped Mean (d) none Ans : (c) [SM, MTP Nov 21]
160.	Half of the numbers in an ordered set have values less than the ----- and half will have values greater than the ----- . (a) mean, median (b) median, median (c) mode, mean (d) none. Ans : (b)
161.	The median of 27, 30, 26, 44, 42, 51, 37 is (a) 30 (b) 42 (c) 44 (d) 37 Ans : (d) [SM, MTP Nov 21]
162.	For an even number of values the median is the (a) average of two middle values (b) middle value (c) both (d) none Ans : (a)
163.	In the case of a continuous frequency distribution, the size of the ----- item indicates class interval in which the median lies. (a) $(n-1)/2^{\text{th}}$ (b) $(n+1)/2^{\text{th}}$ (c) $n/2^{\text{th}}$ (d) none Ans : (c)
164.	The deviations from median are ----- if negative signs are ignored as compared to other measures of central tendency. (a) minimum

	(b) maximum (c) same (d) none Ans : (a)												
165.	Ninth Decile lies in the class interval of the item (a) $n/9$ (b) $9n/10$ (c) $9n/20$ (d) none item. Ans : (b)												
166.	Ninety Ninth Percentile lies in the class interval of the item (a) $99n/100$ (b) $99n/10$ (c) $99n/200$ (d) none item. Ans : (a)												
167.	----- is the value of the variable at which the concentration of observation is the densest. (a) mean (b) median (c) mode (d) none Ans : (c)												
168.	<table border="1"><tr><td>Height in cms</td><td>60-62</td><td>63-66</td><td>66-68</td><td>69-71</td><td>72-74</td></tr><tr><td>No. of students</td><td>15</td><td>118</td><td>142</td><td>127</td><td>18</td></tr></table> Modal group is (a) 66-68 (b) 69-71 (c) 63-65 (d) none Ans : (a)	Height in cms	60-62	63-66	66-68	69-71	72-74	No. of students	15	118	142	127	18
Height in cms	60-62	63-66	66-68	69-71	72-74								
No. of students	15	118	142	127	18								
169.	A distribution is said to be symmetrical when the frequency rises & falls from the highest value in the ----- proportion. (a) unequal (b) equal (c) both (d) none Ans : (b)												
170.	----- always lies in between the arithmetic mean & mode. (a) G.M (b) H.M (c) Median (d) none Ans : (c)												

171.	Logarithm of $G.M$ is the ----- of logarithms of the different values. (a) weighted mean (b) simple mean (c) both (d) none Ans : (a)
172.	----- is not much affected by fluctuations of sampling. (a) $A.M$ (b) $G.M$ (c) $H.M$ (d) none Ans : (b)
173.	The data 1, 2, 4, 8, 16 are in (a) Arithmetic progression (b) Geometric progression (c) Harmonic progression (d) none Ans : (b)
174.	----- & ----- can not be calculated if any observation is zero. (a) $G.M$ & $A.M$ (b) $H.M$ & $A.M$ (c) $H.M$ & $G.M$ (d) None. Ans : (C)
175.	----- & ----- are called ratio averages. (a) $H.M$ & $G.M$ (b) $H.M$ & $A.M$ (c) $A.M$ & $G.M$ (d) none Ans : (c) [SM, MTP Nov 18, May 24]
176.	----- is a good substitute to a weighted average. (a) $A.M$ (b) $G.M$ (c) $H.M$ (d) none Ans : (c)
177.	For ordering shoes of various sizes for resale, a ----- size will be more appropriate. (a) median (b) modal (c) mean (d) none Ans : (b)
178.	----- is called a positional measure. (a) mean

	(b) mode (c) median (d) none Ans : (c)
179.	Which of the following is positional average? (a) Median (b) GM (c) HM (d) AM Ans : (a) [MTP Nov 22]
180.	50% of actual values will be below & 50% of will be above ----- (a) mode (b) median (c) mean (d) none Ans : (b)
181.	Extreme values have ----- effect on mode. (a) high (b) low (c) no (d) none Ans : (c)
182.	Extreme values have ----- effect on median. (a) high (b) low (c) no (d) none Ans : (c)
183.	Extreme values have ----- effect on $A.M$. (a) greatest (b) least (c) some (d) none Ans : (a)
184.	Extreme values have ----- effect on $H.M$. (a) Least (b) greatest (c) medium (d) none Ans : (a)
185.	----- is used when representation value is required & distribution is asymmetric. (a) mode (b) mean (c) median (d) none Ans : (b)
186.	----- is used when most frequently

	occurring value is required (discrete variables). (a) mode (b) mean (c) median (d) none Ans : (b)
187.	———— is used when rate of growth or decline required. (a) mode (b) A.M (c) G.M (d) none Ans : (c)
188.	In finding ———, the distribution has open-end classes. (a) median (b) mean (c) standard deviation (d) none Ans : (a)
189.	The cumulative frequency distribution is used for (a) median (b) mode (c) mean (d) none Ans : (a)
190.	In ——— the quantities are in ratios. (a) A.M (b) G.M (c) H.M (d) none Ans : (b)
191.	———— is used when variability has also to be calculated. (a) A.M (b) G.M (c) H.M (d) none Ans : (a)
192.	———— is used when the sum of absolute deviations from the average should be least. (a) Mean (b) Mode (c) Median (d) None Ans : (c)
193.	———— is used when sampling variability should be least. (a) Mode (b) Median

	(c) Mean (d) none Ans : (c)
194.	———— is used when distribution pattern has to be studied at varying levels. (a) A.M (b) Median (c) G.M (d) none Ans : (b)
195.	The average discovers (a) uniformity in variability (b) variability in uniformity of distribution (c) both (d) none Ans : (a)
196.	The average has relevance for (a) homogeneous population (b) heterogeneous population (c) both (d) none Ans : (b)
197.	The correction factor is applied in (a) inclusive type of distribution (b) exclusive type of distribution (c) both (d) none Ans : (a)
198.	"Mean has the least sampling variability" prove the mathematical property of mean (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
199.	"The sum of deviations from the mean is zero" — is the mathematical property of mean (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
200.	"The mean of the two samples can be combined" — is the mathematical property of mean (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
201.	"Choices of assumed mean does not affect the

	actual mean"— prove the mathematical property of mean (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
202.	"In a moderately asymmetric distribution mean can be found out from the given values of median & mode"— is the mathematical property of mean (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
203.	The mean wages of two companies are equal. It signifies that the workers of both the companies are equally well-off. (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
204.	The mean wage in factory A is Rs 6,000 whereas in factory B it is Rs 5,500. It signifies that factory A pays more to all its workers than factory B. (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
205.	Mean of 0, 3, 5, 6, 7, 9, 12, 0, 2 is (a) 4.9 (b) 5.7 (c) 5.6 (d) none Ans : (a)
206.	Median of 15, 12, 6, 13, 12, 15, 8, 9 is (a) 13 (b) 8 (c) 12 (d) 9 Ans : (c)
207.	Median of 0.3, 5, 6, 7, 9, 12, 0, 2 is (a) 7 (b) 6 (c) 3

	(d) 5 Ans : (d)
208.	Mode of 0, 3, 5, 6, 7, 9, 12, 0, 2 is (a) 6 (b) 0 (c) 3 (d) 5 Ans : (b)
209.	Mode of 15, 12, 5, 13, 12, 15, 8, 8, 9, 9, 10, 15 is (a) 15 (b) 12 (c) 8 (d) 9 Ans : (a)
210.	Median of 40, 50, 30, 20, 25, 35, 30, 30, 20, 30 is (a) 25 (b) 30 (c) 35 (d) none Ans : (b)
211.	Mode of 40, 50, 30, 20, 25, 35, 30, 30, 20, 30 is (a) 25 (b) 30 (c) 35 (d) none Ans : (b)
212.	----- in particular helps in finding out the variability of the data. (a) Dispersion (b) Median (c) Mode (d) None Ans : (a)
213.	Measures of central tendency are called averages of the ----order. (a) 1 st (b) 2 nd (c) 3 rd (d) none Ans : (a)
214.	Measures of dispersion are called averages of the ----order. (a) 1 st (b) 2 nd (c) 3 rd (d) none Ans : (b)
215.	In measuring dispersion, it is necessary to

	know the amount of ----- & the degree of -----. (a) variation, variation (b) variation, median (c) median, variation (d) none Ans : (a)	222.	----- factor helps to know the value of standard deviation. (a) Correction (b) Range (c) both (d) none Ans : (a)
216.	The amount of variation is designated as ----- measure of dispersion. (a) relative (b) absolute (c) both (d) none Ans : (b)	223.	----- is extremely sensitive to the size of the sample (a) Range (b) Mean (c) Median (d) Mode Ans : (a)
217.	The degree of variation is designated as ----- measure of dispersion. (a) relative (b) absolute (c) both (d) none Ans : (a)	224.	As the sample size increases, ----- also tends to increase. (a) Range (b) Mean (c) Median (d) Mode Ans : (a)
218.	For purposes of comparison between two or more series with varying size or no. of items, varying central values or units of calculation, only ----- measures can be used. (a) absolute (b) relative (c) both (d) none Ans : (b)	225.	As the sample size increases, range also tends to increase though not proportionately. (a) TRUE (b) FALSE (c) both (d) none. Ans : (a)
219.	The relation $\text{Relative range} = \frac{\text{Absolute range}}{\text{Sum of the two extremes}}$ is (a) TRUE (b) FALSE (c) both (d) none Ans : (a)	226.	As the sample size increases, range also tends to (a) decrease (b) increase (c) same (d) none Ans : (b)
220.	The relation $\text{Absolute range} = \text{Relative range} \times \text{Sum of the two extremes}$ is (a) TRUE (b) FALSE (c) both (d) none Ans : (b)	227.	The dependence of range on extreme items can be avoided by adopting (a) standard deviation (b) mean deviation (c) quartile deviation (d) none Ans : (c)
221.	In quality control ----- is used as a substitute for standard deviation. (a) mean deviation (b) median (c) range (d) none Ans : (c)	228.	Quartile deviation is called (a) semi inter quartile range (b) quartile range (c) both (d) none Ans : (a)
		229.	When 1st quartile = 20, 3rd quartile = 30, the value of quartile deviation is (a) 7

	(b) 4 (c) -5 (d) 5 Ans : (d)														
230.	(Q 3 - Q1)/(Q 3 + Q1) is (a) coefficient of Quartile Deviation (b) coefficient of Mean Deviation (c) coefficient of Standard deviation (d) none Ans : (a)														
231.	Standard deviation is denoted by (a) σ^2 (b) σ (c) $\sqrt{\sigma}$ (d) none Ans : (b)														
232.	The square of standard deviation is known as (a) variance (b) standard deviation (c) mean deviation (d) none Ans : (a)														
233.	Mean of 25, 32, 43, 53, 62, 59, 48, 31, 24, 33 is (a) 44 (b) 43 (c) 42 (d) 41 Ans : (d) [SM, MTP Nov 21]														
234.	For the following frequency distribution <table border="1"><tr><td>Class interval</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td><td>50-60</td><td>60-70</td></tr><tr><td>Frequency</td><td>20</td><td>9</td><td>31</td><td>18</td><td>10</td><td>9</td></tr></table> assumed mean can be taken as (a) 55 (b) 45 (c) 35 (d) none Ans : (c)	Class interval	10-20	20-30	30-40	40-50	50-60	60-70	Frequency	20	9	31	18	10	9
Class interval	10-20	20-30	30-40	40-50	50-60	60-70									
Frequency	20	9	31	18	10	9									
235.	The value of the standard deviation does not depend upon the choice of the origin. (a) TRUE (b) FALSE (c) both (d) both Ans : (a)														
236.	Coefficient of standard deviation is (a) S.D/Median (b) S.D/Mean														

	(c) S.D/Mode (d) none Ans : (b)
237.	The value of the standard deviation will change if any one of the observations is changed. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
238.	When all the values are equal then variance & standard deviation would be (a) 2 (b) -1 (c) 1 (d) 0 Ans : (d)
239.	For values lie close to the mean, the standard deviations are (a) big (b) small (c) moderate (d) none Ans : (b)
240.	If the same amount is added to or subtracted from all the values, variance & standard deviation shall (a) changed (b) unchanged (c) both (d) none Ans : (b) [SM, MTP Nov 23, July 24]
241.	If the same amount is added to or subtracted from all the values, the mean shall increase or decrease by the ----- amount (a) big (b) small (c) same (d) none Ans : (c)
242.	If all the values are multiplied by the same quantity, the ----- & ----- also would be multiple of the same quantity. (a) mean, standard deviation (b) mean, median (c) mean, mode (d) median, deviations Ans : (a)
243.	For a moderately non-symmetrical distribution,

	Mean deviation = $\frac{4}{5}$ of standard deviation (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
244.	For a moderately non-symmetrical distribution, Quartile deviation = Standard deviation/3 (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
245.	For a moderately non-symmetrical distribution, probable error of standard deviation = Standard deviation/3 (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
246.	Quartile deviation = Probable error of Standard deviation. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
247.	Coefficient of Mean Deviation is (a) Mean deviation $\times$ 100/Mean or mode (b) Standard deviation $\times$ 100/Mean or median (c) Mean deviation $\times$ 100/Mean or median (d) none Ans : (d)
248.	Coefficient of Quartile Deviation = Quartile Deviation $\times$ 100/Median (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
249.	Karl Pearson's measure gives (a) coefficient of Mean Variation (b) coefficient of Standard deviation (c) coefficient of variation (d) none Ans : (c)
250.	In ---- range has the greatest use. (a) Time series (b) quality control

	(c) both (d) none Ans : (b)
251.	Mean is an absolute measure & standard deviation is based upon it. Therefore standard deviation is a relative measure. (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
252.	Semi-quartile range is one-fourth of the range in a normal symmetrical distribution. (a) Yes (b) No (c) both (d) none Ans : (a)
253.	Whole frequency table is needed for the calculation of (a) range (b) variance (c) both (d) none Ans : (c)
254.	Relative measures of dispersion make deviations in similar units comparable. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
255.	Quartile deviation is based on the (a) highest 50% (b) lowest 25% (c) highest 25% (d) middle 50% of the item. Ans : (d)
256.	S.D is less than Mean deviation (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
257.	Coefficient of variation is independent of the unit of measurement. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)

258.	Coefficient of variation is a relative measure of (a) mean (b) deviation (c) range (d) dispersion. Ans : (d)
259.	Coefficient of variation is equal to (a) Standard deviation $\times$ 100 / median (b) Standard deviation $\times$ 100 / mode (c) Standard deviation $\times$ 100 / mean (d) none Ans : (c) [SM, MTP Nov 18]
260.	Coefficient of Quartile Deviation is equal to (a) Quartile deviation $\times$ 100 / median (b) Quartile deviation $\times$ 100 / mean (c) Quartile deviation $\times$ 100 / mode (d) none Ans : (a)
261.	If each item is reduced by 15 A.M is (a) reduced by 15 (b) increased by 15 (c) reduced by 10 (d) none Ans : (a)
262.	If each item is reduced by 10, the range is (a) increased by 10 (b) decreased by 10 (c) unchanged (d) none Ans : (c)
263.	If each item is reduced by 20, the standard deviation (a) increased (b) decreased (c) unchanged (d) none Ans : (c)
264.	If the variables are increased or decreased by the same amount the standard deviation is (a) decreased (b) increased (c) unchanged (d) none Ans : (c)
265.	If the variables are increased or decreased by the same proportion, the standard deviation changes by (a) same proportion

	(b) different proportion (c) both (d) none Ans : (a)
266.	The mean of the 1st n natural no. is (a) $n/2$ (b) $(n-1)/2$ (c) $(n+1)/2$ (d) none Ans : (c)
267.	If the class interval is open-end then it is difficult to find (a) frequency (b) A.M (c) both (d) none Ans : (b)
268.	Which one is true— (a) A.M = assumed mean + arithmetic mean of deviations of terms (b) G.M = assumed mean + arithmetic mean of deviations of terms (c) Both (d) none Ans : (a)
269.	If the A.M of any distribution be 25 & one term is 18. Then the deviation of 18 from A.M is (a) 7 (b) -7 (c) 43 (d) none Ans : (b) [SM, MTP Nov 21]
270.	For finding A.M in Step-deviation method, the class intervals should be of (a) equal lengths (b) unequal lengths (c) maximum lengths (d) none Ans : (a)
271.	The sum of the squares of the deviations of the variable is ----- when taken about A.M (a) maximum (b) zero (c) minimum (d) none Ans : (c)
272.	The A.M of 1, 3, 5, 6, x, 10 is 6. The value of x

	is (a) 10 (b) 11 (c) 12 (d) none Ans : (b)														
273.	The G.M of 2 & 8 is (a) 2 (b) 4 (c) 8 (d) none Ans : (b)														
274.	$(n+1)/2$ th term is median if n is (a) odd (b) even (c) both (d) none Ans : (a)														
275.	For the values of a variable 5, 2, 8, 3, 7, 4, the median is (a) 4 (b) 4.5 (c) 5 (d) none Ans : (b)														
276.	The abscissa of the maximum frequency in the frequency curve is the (a) mean (b) median (c) mode (d) none Ans : (c)														
277.	<table border="1"><tr><td>Variable:</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>No. of men:</td><td>5</td><td>6</td><td>8</td><td>13</td><td>7</td><td>4</td></tr></table> (a) 6 (b) 4 (c) 5 (d) none Ans : (c)	Variable:	2	3	4	5	6	7	No. of men:	5	6	8	13	7	4
Variable:	2	3	4	5	6	7									
No. of men:	5	6	8	13	7	4									
278.	The class having maximum frequency is called (a) modal class (b) median class (c) mean class (d) none Ans : (a)														
279.	For determination of mode, the class intervals should be (a) overlapping (b) maximum (c) minimum														

	(d) none Ans : (a)
280.	First Quartile lies in the class interval of the (a) $n/2^{\text{th}}$ item (b) $n/4^{\text{th}}$ item (c) $3n/4^{\text{th}}$ item (d) $n/10^{\text{th}}$ item Ans : (b)
281.	The value of a variate that occur most often is called (a) median (b) mean (c) mode (d) none Ans : (c)
282.	For the values of a variable 3, 1, 5, 2, 6, 8, 4 the median is (a) 3 (b) 5 (c) 4 (d) none Ans : (c)
283.	If $y = 5x - 20$ & $\bar{x} = 30$ then the value of $\bar{y}$ is (a) 130 (b) 140 (c) 30 (d) none Ans : (a)
284.	If $y = 3x - 100$ and $\bar{x} = 50$ then the value of $\bar{y}$ is (a) 60 (b) 30 (c) 100 (d) 50 Ans : (d)
285.	The median of the numbers 11, 10, 12, 13, 9 is (a) 12.5 (b) 12 (c) 10.5 (d) 11 Ans : (d)
286.	The mode of the numbers 7, 7, 7, 9, 10, 11, 11, 11, 12 is (a) 11 (b) 12 (c) 7 (d) 7 & 11 Ans : (d)
287.	In a symmetrical distribution when the 3rd quartile plus 1st quartile is halved, the value would give

	(a) mean (b) mode (c) median (d) none Ans : (c)		(a) median (b) mode (c) mean (d) none Ans : (c)
288.	In Zoology ----- is used. (a) median (b) mean (c) mode (d) none Ans : (c)	291.	Coefficient of Standard deviation is equal to (a) S.D/A.M (b) A.M/S.D (c) S.D/GM (d) none Ans : (a)
289.	For calculation of Speed & Velocity (a) G.M (b) A.M (c) H.M (d) none is used. Ans : (c)	292.	The distribution, for which the coefficient of variation is less, is ---- consistent. (a) less (b) more (c) moderate (d) none Ans : (b)
290.	The S.D is always taken from		

RTP and MTPs

1.	The standard deviation of 25, 32, 43, 53, 62, 59, 48, 31, 24, 33 is (a) 13.23 (b) 12.33 (c) 11.33 (d) none of these Ans : (a) [MTP May 18, June 24]	(a) 14.5 (b) 15 (c) 14 (d) 15.6 Ans : (d) [MTP May 18, June 24, May 22]
2.	The quartile deviation of a normal distribution with mean 10 and standard deviation 4 is (a) 0.675 (b) 67.5 (c) 2.70 (d) 3.20 Ans : (c) [MTP May 18, June 24]	5. The Standard deviation is independent of change of (a) Origin (b) Scale (c) Both (d) none Ans : (a) [MTP May 18, Nov 21, June 24, RTP Jan 25]
3.	If the quartile deviation of a normal curve is 4.05, then its mean deviation is (a) 5.26 (b) 6.24 (c) 4.24 (d) 4.80 Ans : (d) [MTP May 18, June 24]	6. Stub' of a table is the _____ part of the table describing the _____. (a) Left, Columns (b) Right, Columns (c) Right, Rows (d) Left, Rows Ans : (d) [MTP May 18, June 24]
4.	The mean of first 3 terms is 14 and the mean of next 2 terms is 18. The mean of 5 numbers is	7. The pair of averages whose value can be determined graphically? (a) Mean and Median (b) Mode and Mean (c) Mode and Median

	(d) None of these Ans : (c) [MTP May 18, June 24]
8.	When the mean is 3.57 and mode is 2.13, then the value of median is ____ (a) 3.09 (b) 5.01 (c) 5.01 (d) none of these Ans : (a) [MTP May 18, June 24, May 22, May 21]
9.	What is exclusive Series (a) In which both upper and lower limit are not included in class frequency (b) In which lower limit is not included class frequency (c) In which upper limit is not included in class frequency (d) None of the above Ans : (c) [MTP May 18, June 24]
10.	If the mean of frequency distribution is 100 and coefficient of variation is 45% then standard deviation is (a) 45 (b) 0.45 (c) 4.5 (d) 450 Ans : (a) [MTP May 18, June 24]
11.	The difference between the upper and lower limit of a class is called (a) Class Interval (b) Mid Value (c) Class Boundary (d) Frequency Ans : (a) [MTP May 18, Nov 22, June 24]
12.	If the first quartile is 56. and the third quartile is 77. then the co-efficient of quartile deviation is (a)18.09 (b) 15.79 (c) 63.80 (d) 56.71 Ans : B [MTP June 23]
13.	The average age of 15 students in a class is 9 years. Out of them, the average age of 5 students is 13 years and that 8 students is 5 years. What is the average of remaining 2 students?

	(a) 5 years (b) 9 years (c) 10 years (d) 15 years Ans :D [MTP June 23]
14.	If the two quartiles of a normal distribution are 47.30 and 52.70 respectively, what is the mode of the distribution? Also find the mean deviation about median of this distribution (a) 3.80 (b) 3.40 (c) 3.20 (d) 4.20 Ans : (c) [MTP May 20, Jan 25]
15.	Median of a distribution can be obtained from (a) Frequency polygon (b) Histogram (c) Less than type ogives (d) None of these Ans : (c) [MTP May 20]
16.	Mode of distribution can be obtained from (a) Histogram (b) Less than type of ogives (c) More than type of ogives (d) Frequency polygon Ans : (a) [MTP Nov 18]
17.	The quartiles of the variables are 45, 52, and 65 respectively, its Quartile Deviation is (a) 5 (b) 10 (c) 25 (d) 8.30 Ans : (b) [MTP Nov 20, RTP Sep 24]
18.	Two variables assume the values 1,2, 3,... 5 with frequencies as 1, 2, 3, ..5 , then what is the AM ? (a) 11/3 (b) 15/8 (c) 4.86 (d) 10 Ans : (a) [MTP Nov 20]
19.	Which of the following measures of central

	tendency cannot be calculated by graphical method? (a) Mean (b) Mode (c) Median (d) Quartile Ans : (a) [MTP May 21]
20.	The SD for the data 6, 9, 10, 3, 7 is (a) 2.35 (b) 2.45 (c) 2.55 (d) 2.65 Ans : (b) [MTP Nov 18]
21.	Relationship between AM, GM, and HM (a) $GM \geq AM \geq HM$ (b) $AM \geq GM \geq HM$ (c) $HM \geq AM \geq GM$ (d) none of these Ans : (b) [MTP Nov 18]
22.	The MD about the Mean for the data 6,9,11,10,12,12 (a) 1.47 (b) 1.57 (c) 1.67 (d) 1.87 Ans : (c) [MTP Nov 18]
23.	The mean salary for a group of for a group of 50 male workers is Rs.4800 per month and that for a group of 50 female workers is Rs. 5600. the combined mean salary is (a) 5100 (b) 5200 (c) 5300 (d) 5400 Ans : (b) [MTP Nov 18]
24.	The mean salary for a group of 40 female workers is Rs. 5200 per month and that for a group of 60 male workers is Rs. 6800 per month. What is the combined salary ? (a) Rs. 6160 (b) Rs. 6280 (c) Rs. 6890 (d) Rs. 6920 Ans : (a) [MTP April 24, May 21(Similar)]

25.	If X and Y are independent normal Variables with mean 100 and 80 respectively and standard deviation as 4 and 3 respectively. What is the distribution of (X+Y)? (a) 180, 5 (b) 180, 25 (c) 90, 5 (d) 180, 0 Ans : (a) [MTP 1 and 2 Nov 18]
26.	If the SD of a variance X is σ then Quartile Deviation (QD) is (a) $4/5 \sigma$ (b) $3/2 \sigma$ (c) $2/3 \sigma$ (d) $5/4 \sigma$ Ans : (c) [MTP Nov 18]
27.	The Geometric mean of the series 1, k, k^2 , ..., k^n ; where k is constant is (a) $K^{(n+1)/2}$ (b) $K^{n+0.5}$ (c) K^{n+1} (d) $K^{n/2}$ Ans : (a) [MTP Nov 18]
28.	The mean age of a group of 100 men and women is 25 years. If the mean age of the group of men is 26, then that of the group of women is 21 then the ratio of women and men in the group: (a) 1:1 (b) 1:2 (c) 1:3 (d) 1:4 Ans : (d) [MTP Nov 18]
29.	If the mean of the set of observations $x_1, x_2, x_3, \dots, x_n$, is $\bar{X}$, then the mean of the observation $x_i + K_i$, where $i = 1, 2, 3, \dots, n$ and (a) $\bar{X} + K(n+1)$ (b) $\bar{X} + kn$ (c) $\bar{X} + K/n$ (d) $\bar{X} + K/2 (n + 1)$ Ans : (d) [MTP Nov 18]
30.	The mean of four observations is 10 and when a constant a is added to each observation, the mean becomes 13. The

	value of a is (a) 2 (b) -3 (c) 3 (d) none of these Ans: (c) [MTP Nov 19]
31.	If the values of all observations are equal then the Standard Deviation of the given observations is (a) 0 (b) 2 (c) 1 (d) none of these Ans: (a) [MTP Nov 19]
32.	The Standard Deviation of a set of 50 items is 10. Find the Standard Deviation if every item is increased by 5. (a) 15 (b) 5 (c) 10 (d) none of these Ans: (c) [MTP Nov 19]
33.	The width of each of ten classes in a frequency distribution is 2.5 and the lower class boundary of the lowest class is 10.6. Which one of the following is the upper class boundary of the highest class? (a) 35.6 (b) 33.1 (c) 30.6 (d) None of these Ans: (b) [MTP Nov 19]
34.	Let L be the lower class boundary of a class in a frequency distribution and m be the mid-point of the class. Which one of the following is the higher class boundary of the class? (a) $m + \frac{m+2}{2}$ (b) $L + \frac{m+l}{2}$ (c) $2m-L$ (d) $m-2L$ Ans: (c) [MTP Nov 19, May 24]
35.	The mean of the values of 1, 2, 3 n

	with respective frequencies x, 2x, 3x, ... nx is (a) $\frac{n+1}{2}$ (b) $\frac{n}{2}$ (c) $\frac{2n+1}{3}$ (d) $\frac{2n+1}{6}$ Ans: (c) [MTP Nov 19, May 24]
36.	The third decile for the numbers 15, 10, 20, 25, 18, 11, 9, 12 is (a) 13 (b) 10.7 (c) 11 (d) 11.5 Ans: (b) [MTP Nov 19]
37.	Find the coefficient of variation if the sum of squared deviations taken from mean 40 of 10 observations is 360 (a) 15 (b) 20 (c) 40 (d) none of these Ans: (a) [MTP Nov 19]
38.	The average of n numbers is x. If each of the numbers is multiplied by (n+1); then the average of new set of numbers is (a) x (b) $\frac{x}{n+1}$ (c) $(n+1).x$ (d) none of these Ans: (c) [MTP Nov 19]
39.	The average weight of 8 person increases by 1.5 kg, if a person weighing 65 kg replaced by a new person, what would be the weight of the new person? (a) 76kg (b) 80kg (c) 77kg (d) none of these Ans: (c) [MTP Nov 19]
40.	The mean of 1,2,3, ... n is $\frac{6x}{11}$; then the value of x is (a) 14

	(b) 13 (c) 126 (d) 11 Ans : (d) [MTP Nov 18]
41.	Two variables x and y satisfy the relation $3x - 2y - 25 = 0$ the mode of x is 25. Then the mode of y is: (a) 25 (b) 30 (c) 37.5 (d) 52/3 Ans : (a) [MTP Nov 18]
42.	for two numbers " a " and " b ", Standard Deviation given by (a) $\frac{ a-b }{2}$ (b) $\sqrt{\frac{a-b}{2}}$ (c) $\frac{a-b}{2}$ (d) $\sqrt{\frac{a+b}{2}}$ Ans : (a) [MTP Nov 18]
43.	The deviations are minimum when taken from (a) Mean (b) Median (c) Mode (d) GM Ans.(b) [MTP May 22, RTP Sep 24]
44.	If $2x + 3y + 4 = 0$ and $V(x) = 6$ then $V(y)$ is (a) 8/3 (b) 9 (c) -9 (d) 6 Ans.(a) [MTP May 22, Nov 22]
45.	For a moderately skewed distribution, the median is twice the mean, then the mode is times the median. (a) 3 (b) 2 (c) 2/3 (d) 3/2 Ans : (b) [MTP May 22]
46.	If average marks for a group of 30 girls is 80, a group of boys is 70 and combined

	average is 76, then how many boys are in the group ? (a) 21 (b) 20 (c) 22 (d) 19 Ans : (b) [MTP May 22]												
47.	The median value of the set of observations 48, 36, 72, 87, 19, 66, 56 and 91 (a) 53 (b) 87 (c) 61 (d) 19 Ans : (c) [MTP May 22]												
48.	If two variables a and b are related by $c = ab$ then GM of $c =$ (a) GM of $a + GM$ of b (b) GM of $a \times GM$ of b (c) GM of $a - GM$ of b (d) GM of a / GM of b Ans : (b) [MTP May 22]												
49.	The mean weight of 15 students is 110 kg. The mean weight of 5 of them is 100 kg. and of another five students is 125 kg. then the mean weight of the remaining students is : (a) 120 (b) 105 (c) 115 (d) None of these Ans.(b) [MTP May 22, April 24]												
50.	If the Arithmetic mean between two numbers is 64 and the Geometric mean between them is 16. The Harmonic Mean between them is (a) 64 (b) 4 (c) 16 (d) 40 Ans.(b) [MTP May 22]												
51.	The frequency of the Class 20-30 in the following data is: <table><tr><td>Class</td><td>0-10</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td></tr><tr><td>Cumulative Frequency</td><td>5</td><td>13</td><td>28</td><td>34</td><td>38</td></tr></table>	Class	0-10	10-20	20-30	30-40	40-50	Cumulative Frequency	5	13	28	34	38
Class	0-10	10-20	20-30	30-40	40-50								
Cumulative Frequency	5	13	28	34	38								

	(a) 5 (b) 28 (c) 15 (d) 13 Ans : 3 [MTP May 22]
52.	If mean and coefficient of variation of the marks of 10 students is 20 and 80 respectively. What will be variance of them (a) 256 (b) 16 (c) 25 (d) None of these Ans : a [MTP May 22, Nov 23, July 24, Dec 24]
53.	Less than type and more than type Ogives meet at a point known as: (a) Mean (b) Median (c) Mode (d) None Ans : (b) [MTP May 22]
54.	If the difference between mean and mode is 33, then the difference between Mean and Median will be (a) 63 (b) 31.5 (c) 11 (d) None of the above Ans : c [MTP May 22, Nov 22]
55.	If the difference between mean and mode is 63, then the difference between Mean and Median will be (a) 63 (b) 31.5 (c) 21 (d) None of the above Ans : D [MTP Dec 24]
56.	If the difference between mean and mode is 69, then the difference between Mean and Median will be (a) 63 (b) 31.5 (c) 23 (d) None of the above Ans : (c) [MTP April 24]
57.	Geometric Mean of 8,4, 2 is

	(a) 4 (b) 2 (c) 8 (d) none of these Ans : 1 [MTP May 22]
58.	The first Quartile is 142 and Semi-Inter Quartile Range is 18 , then the value of Median is: (a) 151 (b) 160 (c) 178 (d) None of these Ans : (b) [MTP May 22, Nov 23, July 24]
59.	The Quartile deviation is (a) $\frac{2}{3}$ of SD (b) $\frac{4}{5}$ of SD (c) $\frac{5}{6}$ of SD (d) None of these Ans : 1 [MTP May 22]
60.	The Standard deviation of a variable x is to be 10. The Standard deviation of $50+5x$ is (a) 50 (b) 100 (c) 10 (d) 500 Ans : (a) [MTP May 21, 22]
61.	SD of first five consecutive natural numbers is: (a) $\sqrt{10}$ (b) $\sqrt{8}$ (c) $\sqrt{3}$ (d) $\sqrt{2}$ Ans : (d) [MTP May 22, Nov 22]
62.	The quartile deviation from the following observations is 10,18,20,28,15,17,22,25,29,32,34 is equal to (a) 8 (b) 6 (c) 10 (d) 5 Ans : (b) [MTP May 22]
63.	If the profit of a company remains same for the last 10 months then the SD of profit of the company would be: (a) Positive

	(b) Negative (c) Zero (d) either (a) or (c) Ans : 3 [MTP May 22]
64.	There were 200 employees in an office in which 150 were married. Total male employees were 160 out of which 120 were married. What was the female unmarried employees? (a) 30 (b) 10 (c) 40 (d) 50 Ans : (b) [MTP May 22]
65.	The sum of squares of the deviations of the given values from their is minimum (a) Arithmetic Mean (b) Median (c) Mode (d) None of these Ans: (a) [MTP May 22]
66.	If the relationship between two variables u and v are given by $2u + v + 7 = 0$ and if the AM of u is 10, then the AM of v is (a) 17 (b) -17 (c) -27 (d) 27 Ans : C [MTP Jan 25]
67.	Ogive for more than type and less than type distributions intersect at (a) Means (b) Median (c) Mode (d) Origin Ans : C [MTP April 23]
68.	If mean ($\bar{x}$) is = 10 and mode (Z) is = 7, then find out the value of median (M) (a) 9 (b) 17 (c) 3 (d) 4.33 Ans : A [MTP April 23]

69.	If the coefficient of variation and standard deviation are 60 and 12 respectively, then the arithmetic mean of the distribution is (a) 40 (b) 36 (c) 20 (d) 19 Ans : C [MTP April 23]
70.	_____ is based on all the observations and _____ is based on the central fifty percent of the observations. (a) Mean deviation, Range (b) Mean deviation, quartile deviation (c) Range, standard deviation (d) Quartile deviation, standard deviation Ans : B [MTP April 23]
71.	The relationship between two variable x and y is given by $4x - 10y = 20$. If the median value of the variable x is 20 then what is median value of variable y? (a) 1.0 (b) 2.0 (c) 3.0 (d) 6.0 Ans : D [MTP April 23]
72.	Which one of the following is not a method of measures of dispersion? (a) Standard deviation (b) Mean deviation (c) Range (d) Concurrent deviation method Ans : D [MTP April 23]
73.	Mode is: (a) Least frequent value (b) Middle Most Value (c) Most frequent Value (d) None of these Ans : C [MTP April 23]
74.	The median of the observations 42, 72, 35, 92, 67, 85, 72, 81, 51, 56 is (a) 69.5

	(b) 72 (c) 64 (d) 61.5 Ans : C [MTP April 23]
75.	If the sum of square of the value equals to 3390, Number of observation are 30 and Standard deviation is 7, what is the mean value of the above observation? (a) 14 (b) 11 (c) 8 (d) 5 Ans : C [MTP April 23, May 21]
76.	The mean annual salary of all employees in a company is ₹25,000. The mean salary of male and female employees is ₹27,000 and ₹17,000 respectively. Find the percentage of males and females employed by the company. (a) 60% and 40% (b) 70% and 25% (c) 70% and 30% (d) 80% and 20% Ans : D [MTP April 23]
77.	In a given set if all data are of same value then variance would be: (a) 0 (b) 1 (c) -1 (d) 0.5 Ans : A [MTP April 23]
78.	If the variance of given data is 12, and their mean value is 40, what is coefficient of variation (CV)? (a) 5.66% (b) 6.66% (c) 7.50% (d) 8.65% Ans : D [MTP April 23]
79.	If the variance of random variable 'x' is 18, then what is variance of $y=2x+5$? (a) 34 (b) 39 (c) 68 (d) 72 Ans : B [MTP April 23]

80.	Which of the following is the best measure to calculate the volatility of stock market? (a) Covariance (b) Standard Deviation (c) Variance (d) All of the above Answer(b) [MTP May 23]
81.	If 5 is subtracted from each observation of some certain item then its co- efficient of variation is 10% and if 5 is added to each item then its coefficient of variation is 6%. Find original coefficient of variation. (a) 8% (b) 7.5% (c) 4% (d) None of these Ans : (b) [MTP Dec 24, Dec 23]
82.	Origin is shifted by 5, then (a) SD will increase by 5 (b) QD will increase by 5 (c) MD will increase by 5 (d) There will be no change in SD Ans : (d) [MTP Nov 23, July 24, Dec 24]
83.	A company's past 10 years average earnings is ₹ 40 crores. To have the same average earning for 11 years including theses 10 years, how much earning must be made by the company in the eleventh year ? (a) ₹ 40 crores (b) ₹ $(40 \times 10)/11$ crores (c) More than Rs. 40 crores (d) None of these Ans : B [MTP Dec 24]
84.	In a class of 11 students, 3 students were failed in a test. 8 students who passed secured 10,11,20,15,12,14,26 and 24 marks respectively. What will be the median marks of the students (a) 12 (b) 15 (c) 13 (d) 13.5 Ans : B [MTP Dec 24]
85.	Suppose a population A has 100 observations 101,102,103,200 and another population B has 100 observations 151, 152, 153, 250. If

	V_A and V_B represents the variance of the two populations respectively, then $V_A / V_B =$ (a) $9/4$ (b) 1 (c) $4/9$ (d) $2/3$ Ans : B [MTP Dec 24, April 24]
86.	Arrange the dimensions of Bar diagram, Cube diagram, Pie diagram in sequence (a) 1, 2, 3 (b) 2, 1, 3 (c) 2, 3, 2 (d) 3, 2, 1 Ans : C [MTP Dec 24]
87.	The average age of 15 students is 15 years. Out of these the average age of 5 students is 14 years and that of other 9 students is 16 years, then the age of 15th student is (a) 11 years (b) 14 years (c) 15 years (d) None of these Ans : (a) [MTP April 24]
88.	If variance of x is 5, then find the variance of $(2 - 3x)$ (a) 10 (b) 45 (c) 5 (d) -13 Ans : (b) [MTP April 24, May 21]
89.	The variance of the data 3, 4, 5, 8 is a. 4.5 b. 3.5 c. 5.5 d. 6.5 Ans: (b) [MTP May 21]
90.	The point of intersection of less than ogive and greater than ogive curve is gives us a. Mean b. Mode c. Median d. Harmonic Mean Ans: (c) [MTP May 21]

91.	The median of the data 13, 8, 11, 6, 4, 15, 2, 18 is (a) 5 (b) 8 (c) 11 (d) 9.5 Ans: (d) [MTP May 21]												
92.	Interval Quartile Range is _____ of Quartile Deviation a. Half b. Double c. Triple d. Equal Ans: (b) [MTP May 21]												
93.	The rate of returns from three different shares are 100%, 200% and 300% respectively. The average rate of return will be. (a) 350% (b) 233.33% (c) 200% (d) 300% Ans : (c) [MTP April 24, Nov 21]												
94.	The following frequency distribution <table border="1"><tr><td>x</td><td>12</td><td>17</td><td>24</td><td>36</td><td>45</td></tr><tr><td>F</td><td>2</td><td>5</td><td>3</td><td>9</td><td>8</td></tr></table> Is classified as: (a) Continuous distribution (b) Discrete distribution (c) Cumulative frequency distribution. (d) None of the above Ans: (b) [MTP May 21]	x	12	17	24	36	45	F	2	5	3	9	8
x	12	17	24	36	45								
F	2	5	3	9	8								
95.	Which of the following is affected by shifting of scale (a) SD (b) MD (c) QD (d) All the above Ans: (d) [MTP May 21]												
96.	The of mean and SD of a series is $a + b$, if we add 2 to each observations of the series then the sum of the mean and SD is a. $a+b+2$ b. $6-a+b$ c. $4+a-b$												

	d. $a+b+4$ Ans: (a) [MTP May 21, Nov 22, May 24]
97.	The mean of the variable x is 50, then the mean of $u = 10+5x$ will be a. 250 b. 260 c. 265 d. 273 Ans: (b) [MTP1 and 2 May 21]
98.	The Sum of the squares of the deviations from mean of 10 observations is 250. Mean of the data is 10. Find coefficient of variation. a. 10 % b. 25% c. 50 % d. 0 % Ans: (c) [MTP1 and 2 May 21]
99.	The equation of a line is $5x + 2y = 17$. Mean deviation of y about mean is 5. Calculate mean deviation of x about mean. (a) -2 (b) 2 (c) -4 (d) NONE Ans: (b) [MTP May 21]
100.	G.M is a better measure than others when, (a) ratios and percentages are given (b) interval of scale is given (c) Both (a) and (b) (d) Either (a) or (b) Ans: (a) [MTP May 21]
101.	If X and Y are two random variables then $v(x+y)$, when x is independent of y (a) $v(x) + v(y)$ (b) $v(x) + v(y) - 2 v(x,y)$ (c) $v(x) + v(y) + 2 v(x,y)$ (d) $v(x) - v(y)$ Ans: (a) [MTP May 21, May 24]
102.	If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observations. Then the combined H.M. is given by: (a) 70 (b) 80

	(c) 70.35 (d) 69.48 Ans: (a) [MTP May 21]
103.	A man travels at a speed of 20km/hr and then returns at a speed of 30 km/ hr. His average speed of the whole journey is : (a) 25 km/ hr (b) 24.5 km/hr (c) 24 km/hr (d) None Ans: (c) [MTP May 21]
104.	The mean deviation about median of standard normal variate is (a) 0.675σ (b) 0.675 (c) 0.80σ (d) 0.80 Ans: C [MTP Nov 23]
105.	The AM of 15 observations is 9 and the AM of first 9 observations is 11 and then AM of remaining observations is (a) 11 (b) 6 (c) 5 (d) 9 Ans: B [MTP Nov 22, Nov 23, July 24]
106.	The Harmonic mean H of two numbers is 4 and their arithmetic means A and the geometric mean G satisfy the equation $2A + G^2 = 27$, the numbers are (a) (1,3) (b) (9,5) (c) (6,3) (d) (12,7) Ans: C [MTP Nov 23, July 24]
107.	If the mode of a data is 18 and mean is 24, then median is (a) 18 (b) 24 (c) 22 (d) 21 Ans: C [MTP Nov 23, Dec 23, July 24]
108.	The mean salary of a group of 50 persons is Rs. 5850. Later on it is discovered that the salary of one has been wrongly taken as

	Rs.8000 instead of RS. 7800. The corrected mean salary is (a) Rs.5854 (b) Rs.5846 (c) Rs.5640 (d) None Ans : B [MTP Nov 23, July 24]
109.	The median following numbers , which are given in ascending order is 25. Find the value of x: 11, 13 , 15 , 19 , (x+2) , (x+4) , 30, 35, 39, 46 (a) 22 (b) 20 (c) 15 (d) 30 Ans : A [MTP Nov 23, July 24]
110.	If mean and variance are 5 and 3 respectively then relation between p and q is : (a) $P > q$ (b) $p < q$ (c) $p = q$ (d) p is symmetric Ans : (b) [MTP May 24]
111.	When 10 is subtracted from all the observations, the mean is reduced to 60% of its value. If 5 is added to all the observations, then the mean will be (a) 25 (b) 30 (c) 60 (d) 65 Ans : B [MTP Dec 23]
112.	Mean and S.D. of a given set of observations' is 1,500 and 400 respectively. If there is an increment of 100 in the first year and each observation is hiked by 20% in 2nd years, then find new mean and S.D. (a) 1920,480 (b) 1920,580 (c) 1600,480 (d) 1600,400 Ans : A [MTP Dec 23]
113.	There were 50 students in a class. 10 failed whose average marks were 2.5. The total

	marks of class were 281. Find the average marks of students who passed? (a) 6.4 (b) 25 (c) 256 (d) 86 Ans : A [MTP Dec 23]
114.	The average age of a group of 10 students was 20 years. The average age is increased by two years when two new students joined the group. What is the average age of two new students who joined the group ? (a) 22 years (b) 30 years (c) 44 years (d) 32 years Ans : D [MTP Dec 23]
115.	The average of 10 observations is 14.4. If the average of first four observations is 16.5. The average of remaining 6 observations is : (a) 13.6 (b) 13.0 (c) 13.2 (d) 12.5 Ans : (b) [MTP Nov 21]
116.	If all the observations are decreased by 4, find the relation between new SD and old SD (a) New SD = Old SD/2 (b) New SD = Old SD - 2 (c) New SD = Old SD - 4 (d) Remains unchanged Ans : (d) [MTP Nov 21]
117.	Standard deviation of first n natural number is 2. What is the value of n? (a) 7 (b) 6 (c) 5 (d) 8 Ans : (a) [MTP Nov 21, RTP Jan 25]
118.	Find the variance of $3x+2$ if standard deviation of x is 4 (a) 9 (b) 160

	(c) 16 (d) 144 Ans : (d) [MTP Nov 21]
119.	if the variance of $x = 148.6$ and mean of $x = 40$, then the coefficient of variation is (a) 37.15 (b) 30.48 (c) 33.75 (d) None of these Ans : (b) [MTP Nov 21]
120.	Find D6 for the following observations. 7, 9, 5, 4, 10, 15, 14, 18, 6, 20 (a) 11.40 (b) 12.40 (c) 13.40 (d) 13.80 Ans : (b) [MTP Nov 21]
121.	In the equation $4x+2y = 3$, quartile deviation for y is 3. Find the quartile deviation for x . (a) 4.5 (b) 6 (c) 1.5 (d) None of these Ans : (c) [MTP Nov 21, RTP Jan 25]
122.	The mean height of girls in class is 162cm while for boys is 182cm. The ratio of number of girls: boys is 1:2. Find the mean height of the whole class (a) 170 cm (b) 180 cm (c) 154 cm (d) None of these Ans : (d) [MTP Nov 21]
123.	At ABC Ltd, the average age of employees is 36. Average age of male employees is 38 and that of females is 32. Find the ratio of female to male in the company (a) 1:3 (b) 2:1 (c) 1:2 (d) 3:1 Ans : (c) [MTP Nov 21]
124.	Find the two numbers if AM and GM is 10 and 6 respectively (a) 6, 6

	(b) 12, 8 (c) 9, 4 (d) 18, 2 Ans : (d) [MTP Nov 21]												
125.	Salaries of employees working in ABC limited is as follows <table border="1"> <thead> <tr> <th>Salaries (In thousands)</th> <th>Number of employees</th> </tr> </thead> <tbody> <tr> <td>Below 10</td> <td>28</td> </tr> <tr> <td>Below 20</td> <td>34</td> </tr> <tr> <td>Below 50</td> <td>65</td> </tr> <tr> <td>Below 100</td> <td>84</td> </tr> <tr> <td>Below 1000</td> <td>123</td> </tr> </tbody> </table> Find the number of employees with salaries more than 50k? (a) 65 (b) 84 (c) 39 (d) 58 Ans : (d) [MTP Nov 21]	Salaries (In thousands)	Number of employees	Below 10	28	Below 20	34	Below 50	65	Below 100	84	Below 1000	123
Salaries (In thousands)	Number of employees												
Below 10	28												
Below 20	34												
Below 50	65												
Below 100	84												
Below 1000	123												
126.	Which of the following is a correct statement? (a) Range is unaffected by the change in origin or change in scale (b) Range is affected by the change in origin or change in scale (c) Range is unaffected by the change in origin but affected by change in scale (d) Range is affected by the change in origin but unaffected by change in scale Answer(c) [MTP June 23]												
127.	In case of extreme sampling fluctuations, which is the best measure of dispersion? (a) Quartile Deviation (b) Standard Deviation (c) Mean Deviation (d) Range Answer(a) [MTP June 23]												
128.	A shopkeeper wants to place an order for t-shirts with the wholesaler based on past sales data. The size he orders will be decided looking at the of past sales data? (a) Mean (b) Median (c) Mode (d) None of the above												

	Answer(c) [MTP June 23]
129.	The students of a class Xth have an average weight of 50 kg. The strength of the class is 49 students. On including the weight of the Principal, the average weight shoots up by 0.8 kg. Find the weight of the Principal? (a) 75 (b) 90 (c) 85 (d) None of these Answer(b) [MTP June 23]
130.	The average of $(p+q)$ consecutive numbers starting from 1 is 'r'. If 's' is added to each of the numbers then the new average will be? (a) $r+s$ (b) $r+(s/2)$ (c) $\{r + (p+q+s)\}/(p+q)$ (d) None of these Answer(a) [MTP June 23]
131.	The average weight of 40 people is increased by 2.4 kg when one man weight 73 kg is replaced by another man. Find the weight of the new man? (a) 121 (b) 169 (c) 154 (d) 149 Answer(b) [MTP June 23]
132.	The average salary of the whole employees in a company is Rs.400 per day. The average salary of officers is Rs. 800 per day and that of clerks is Rs. 320 per day. If the number of officers is 40, then find the number of clerks in the company? (a) 50 (b) 100 (c) 150 (d) 200 Answer(d) [MTP June 23]
133.	The average of 6 numbers is 30. If the average of the first four is 25 and that of the last three is 35, the fourth number is (a) 25 (b) 30

	(c) 35 (d) 40 Answer(a) [MTP June 23]
134.	Perpendicular is drawn from the point of intersection of 2 Ogives on the horizontal axis. The value of x denotes: (a) First Quartile (b) Second Quartile (c) Third Quartile (d) Any of the above Answer(b) [MTP June 23]
135.	In study of impact of novel Coronavirus in the world, a frequency graph is plotted for age on the x axis and fatalities on the y axis. Which frequency curve is most expected as the output? (a) J shaped curve (b) U shaped curve (c) Bell shaped curve (d) Mixed shaped curve Answer(a) [MTP June 23]
136.	Find the mean deviation about mean for the numbers: 2,6,7,4,8,3 (a) 4 (b) 6 (c) 5 (d) 2 Answer(d) [MTP June 23]
137.	If Quartile deviation is 7. Find the value of x from the arranged series: 2, x, 6, 7, 9, 16, 18. (a) 5 (b) 2 (c) 8 (d) 6 Answer(b) [MTP June 23]
138.	A student marks were wrongly entered as 85 instead of 45. Due to that the average marks for the whole class got increased by one-fourth. The no. of students in the class is? (a) 80 (b) 160 (c) 40 (d) 20

	Answer(b) [MTP June 23]												
139.	There are two startups in ecommerce sector struggling to acquire the market. Following data is for Mean and Standard Deviation of billing amount of bought items per month on their website <table><tr><th>Startup</th><th>No. of customers / month</th><th>Mean billing amount</th><th>SD of billing amount</th></tr><tr><td>A</td><td>40</td><td>Rs. 2500</td><td>Rs.10</td></tr><tr><td>B</td><td>30</td><td>Rs.2200</td><td>Rs.11</td></tr></table> Which startup has a better consistency when it comes to sales numbers? (a) Startup A (b) Startup B (c) Both A and B (d) Need more information Answer(a) [MTP June 23]	Startup	No. of customers / month	Mean billing amount	SD of billing amount	A	40	Rs. 2500	Rs.10	B	30	Rs.2200	Rs.11
Startup	No. of customers / month	Mean billing amount	SD of billing amount										
A	40	Rs. 2500	Rs.10										
B	30	Rs.2200	Rs.11										
140.	AM and GM are both negative values, HM is equal to: (a) $H = \frac{G}{A^2}$ (b) $H = \frac{G}{A}$ (c) $H = \frac{G^2}{A}$ (d) None of the above Ans: (b) [MTP June 23]												
141.	In a group of persons, average weight is 60 kg. If the average of males and females taken separately is 80 kg and 50 kg respectively, find the ratio of the number of males to that of females. (a) 2:3 (b) 3:2 (c) 2:1 (d) 1:2 Ans : (d) [MTP Nov 22]												
142.	A train covered the first 5 km of its journey at a speed of 30km/hr and next 15 km at a speed of 45 km/hr. The average speed of the train was : (a) 38 km/hr (b) 40 km/hr (c) 36 km/hr (d) 42 km/hr												

	Ans : (b) [MTP Nov 22]										
143.	If the standard deviation of 1, 2, 3, 4, ... 10 is σ, then the standard deviation of 11, 12, 13, 14,....., 20 is: (a) 10σ (b) $10 + \sigma$ (c) σ (d) None of these Ans : (c) [MTP Nov 22]										
144.	What is the standard deviation of the following series : <table border="1"> <thead> <tr> <th>Measurements</th><th>Frequency</th></tr> </thead> <tbody> <tr> <td>0-10</td><td>1</td></tr> <tr> <td>10-20</td><td>3</td></tr> <tr> <td>20-30</td><td>4</td></tr> <tr> <td>30-40</td><td>2</td></tr> </tbody> </table> (a) 81 (b) 7.6 (c) 9 (d) 2.26 Ans : (c) [MTP Nov 22]	Measurements	Frequency	0-10	1	10-20	3	20-30	4	30-40	2
Measurements	Frequency										
0-10	1										
10-20	3										
20-30	4										
30-40	2										
145.	If all observations in a distribution are increased by 6, then the variance of the series will be _____ (a) Increased (b) Decreased (c) Unchanged (d) None of these. Ans : (c) [MTP Nov 22]										
146.	Calculate the value of 3rd quartile from the following data 40, 35, 51, 21, 25, 16, 29, 27, 32 (a) 36.25 (b) 30.25 (c) 25 (d) 35 Ans : (a) [MTP Nov 22]										
147.	The mean of 100 students was 45 . Later on, it was discovered that the marks of two students were misread as 85 and 54 instead of 58 and 45. Find correct mean. (a) 68 (b) 36 (c) 44.64 (d) 52 Ans : (c)										

	[MTP Nov 22]
148.	The arithmetic mean and coefficient of variation of data set x are respectively, 10 and 30. The variance of $30-2x$ is (a) 28 (b) 32 (c) 34 (d) 36 Ans : (d)
	[MTP Nov 22]
149.	The approximate ratio of SD, MD, QD is (a) 2:3:4 (b) 3:4:5 (c) 15:12:10 (d) 5:6:7 Ans : (c)
	[MTP Nov 22]
150.	The geometric mean of three numbers 40, 50 and x is 10, the value of x is (a) 5 (b) 4 (c) 2 (d) $\frac{1}{2}$ Ans : (d)
	[MTP Nov 22]
151.	Mean deviation is _____ when the deviations are taken from the median. (a) maximum (b) minimum (c) zero (d) can't say Ans: (b)
	[RTP May 25]
152.	For a distribution the mean is 30. The standard deviation is 2, then coefficient of variation is. (a) 6.67% (b) 9.45% (c) 7.5% (d) 2.5% Ans: (a)
	[RTP May 25]
153.	If the mode of the following data is 13, then the value of x in the data set is 13, 8, 6, 3, 8, $13, 2x + 3$, 8, 13, 3, 5, 7 (a) 6 (b) 5 (c) 7 (d) 8 Ans: (b)

	[RTP May 25]														
154.	Out of 1000 persons 40% are female, others are male. In a marriage function, 300 persons enjoyed the song. 30% of the people who had not enjoyed the song were female. What is the number of male, who did not enjoy the song in the function? (a) 120 (b) 180 (c) 360 (d) 490 Ans: (d)														
	[RTP May 25]														
155.	Cost of sugar in a month under the heads raw Materials, labour, direct production and others were 12, 20, 35 and 23 units respectively. What is the difference between the central angles for the largest and smallest components of the cost of sugar? (a) 72° (b) 48° (c) 56° (d) 92° Ans: (d)														
	[RTP Sep 24]														
156.	Coefficient of Quartile Deviation is $\frac{1}{4}$ then $Q_3/Q_1 = ?$ (a) $\frac{5}{3}$ (b) $\frac{4}{3}$ (c) $\frac{3}{4}$ (d) $\frac{3}{5}$ Ans : (a)														
	[MTP Nov 22]														
157.	The QD of six numbers 15, 8, 36, 40, 38, 41 is equal to: (a) 12.5 (b) 25 (c) 13.5 (d) 37 Ans : (c)														
	[MTP Nov 22]														
158.	For the distribution														
	<table border="1"> <thead> <tr> <th>x</th><th>f</th></tr> </thead> <tbody> <tr><td>1</td><td>6</td></tr> <tr><td>2</td><td>9</td></tr> <tr><td>3</td><td>10</td></tr> <tr><td>4</td><td>14</td></tr> <tr><td>5</td><td>12</td></tr> <tr><td>6</td><td>8</td></tr> </tbody> </table>	x	f	1	6	2	9	3	10	4	14	5	12	6	8
x	f														
1	6														
2	9														
3	10														
4	14														
5	12														
6	8														

	The value of median is: (a) 3.5 (b) 3 (c) 4 (d) .5 Ans : (c) [MTP Nov 22]
159.	In a moderately skewed distribution the values of mean and median are 12 and 8 respectively. The value of mode is: (a) 0 (b) 12 (c) 15 (d) 30 Ans : (a) [MTP Nov 22]
160.	Mean and S.D. of x is 50 and 5 respectively, Find mean and S.D. of $(X-50)/5$ (a) (1,0) (b) (0,1) (c) (1,-1) (d) (0,-1) Ans : (b) [MTP May 24]
161.	For a set of 100 observations, taking assumed mean as 4, the sum of the deviations is -11 cm, and the sum of the squares of these deviations is 257 cm². The coefficient of variation is: (a) 41.13% (b) 42.13% (c) 40.13% (d) None Ans : (a) [MTP May 24]
162.	The relation between two variables is $2x-3y+12=0$. If mean deviation of y is 6 then mean deviation of x is (a) 9 (b) 6 (c) 3 (d) None of these Ans : (a) [MTP May 24]
163.	Find Q1 for the following observations: 7,9,5,4,10,15,14,18,6,20 (a) 4.75 (b) 5.25 (c) 5.75 (d) 6.25

	Ans : (c) [MTP May 24]
164.	Two variables x and y are related by $5x+2y+5=0$ and $\bar{x}=5$, then $\bar{y}$ is (a) 10 (b) -10 (c) 15 (d) -15 Ans : (d) [MTP May 24]
165.	If the relationship between x and y is given by $4x-6y=13$ and if the median of x is 16. Find median of y. (a) 7.50 (b) 8 (c) 8.50 (d) none of these Ans : (c) [MTP May 24]
166.	If the Standard Deviation of 10 observations is 4 and if each item is divided by -2 then Standard Deviation of new series is (a) 2 (b) -2 (c) 4 (d) None of these Ans : (a) [MTP May 24]
167.	The wages of 8 workers expressed in rupees are 42, 45, 49, 38, 56, 54, 55, 47. Find median wage? (a) 47 (b) 48 (c) 49 (d) 50 Ans : (b) [MTP May 24]
168.	If the mean deviation of a normal variable is 16, what is its quartile deviation? (a) 10 (b) 13.50 (c) 15 (d) 12.50 Ans : (b) [MTP May 24]
169.	The Arithmetic Mean between two numbers is 15 and their G.M. is 9; then the numbers are - (a) 27,3 (b) 9,9

	(c) 16, 9 (d) None of these Ans : (a) [MTP May 24]
170.	The weighted mean of first n natural numbers, if their weights are proportional to their corresponding numbers, is (a) $\frac{2n+1}{3}$ (b) $\frac{n-1}{2}$ (c) $\frac{(n+1)(2n-1)}{6}$ (d) $\frac{3n(n+1)}{2}$ Ans : A [MTP Dec 23]
171.	The average wages of a group of unexperienced labours is ` 1000 and that of a group of experienced labours is ` 1,500. If the combined wage is ` 1200, then what is the percentage of experienced labours? (a) 60% (b) 40% (c) 50% (d) None of these. Ans : B [MTP Dec 23]
172.	If the arithmetic mean of 1st n natural numbers is $6n/11$ then the value of 'n' is: (a) 10 (b) 11 (c) 14 (d) None of these Ans : B [MTP Dec 23]
173.	If the S.D. of x is 4, what is the variance of $(5 - 2x)$? (a) 64 (b) 36 (c) 16 (d) None of these Ans : B [MTP Dec 23]
174.	If the relation between x and y is $4y - 3x = 10$ and the mean deviation about mean for x

	is 12, then the mean deviation of y about mean is: (a) 9.00 (b) 7.80 (c) 12.5 (d) None of these Ans : A [MTP Dec 23]
175.	If R_x and R_y denote ranges of x and y respectively where x and y are related by $4x + 5y + 12 = 0$, what would be the relation between R_x and R_y ? (a) $R_x = R_y$ (b) $4R_x = 5R_y$ (c) $5R_x = 4R_y$ (d) None of these Ans : B [MTP Dec 23]
176.	If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is (a) $x^2 - 16x - 25 = 0$ (b) $x^2 - 16x + 25 = 0$ (c) $x^2 - 16x + 5 = 0$ (d) None of these. Ans : B [MTP Dec 23]

CHAPTER 15: PROBABILITY

SET A

1.	Initially, probability was a branch of (a) Physics (b) Statistics (c) Mathematics (d) Economics. Ans : (c)
2.	Two broad divisions of probability are (a) Subjective probability and objective probability (a) Deductive probability and non-deductive probability (b) Statistical probability and Mathematical probability (c) None of these. Ans : (a)
3.	Subjective probability may be used in (a) Mathematics (b) Statistics (c) Management (d) Accountancy. Ans : (c)
4.	An experiment is known to be random if the results of the experiment (a) Can not be predicted (b) Can be predicted (c) Can be split into further experiments (d) Can be selected at random. Ans : (d)
5.	An event that can be split into further events is known as (a) Complex event (b) Mixed event (c) Simple event (d) Composite event. Ans : (d)
6.	Which of the following pairs of events are mutually exclusive? (a) A : The student reads in a school. B : He studies Philosophy. (b) A : Raju was born in India. B : He is a fine Engineer. (c) A : Ruma is 16 years old. B : She is a good singer. (d) A : Peter is under 15 years of age. B : Peter is a voter of Kolkata.

	Ans : (d)
7.	If $P(A) = P(B)$, then (a) A and B are the same events (b) A and B must be same events (c) A and B may be different events (d) A and B are mutually exclusive events. Ans : (C)
8.	If $P(A \cap B) = 0$, then the two events A and B are (a) Mutually exclusive (b) Exhaustive (c) Equally likely (d) Independent. Ans : (a) [SM, MTP May 19]
9.	If for two events A and B, $P(A \cup B) = 1$, then A and B are (a) Mutually exclusive events (b) Equally likely events (c) Exhaustive events (d) Dependent events. Ans : (c)
10.	If an unbiased coin is tossed once, then the two events Head and Tail are (a) Mutually exclusive (b) Exhaustive (c) Equally likely (d) All these (a), (b) and (c). Ans : (d)
11.	If $P(A) = P(B)$, then the two events A and B are (a) Independent (b) Dependent (c) Equally likely (d) Both (a) and (c). Ans : (c)
12.	If for two events A and B, $P(A \cap B) \neq P(A) \times P(B)$, then the two events A and B are (a) Independent (b) Dependent (c) Not equally likely (d) Not exhaustive. Ans : (b) [SM, MTP May 19]
13.	If $P(A/B) = P(A)$, then (a) A is independent of B (b) B is independent of A

	(c) B is dependent of A (d) Both (a) and (b). Ans : (d)
14.	If two events A and B are independent, then (a) A and the complement of B are independent (b) B and the complement of A are independent (c) Complements of A and B are independent (d) All of these (a), (b) and (c). Ans : (d)
15.	If two events A and B are independent, then (a) They can be mutually exclusive (b) They can not be mutually exclusive (c) They can not be exhaustive (d) Both (b) and (c). Ans : (b)
16.	If two events A and B are mutually exclusive, then (a) They are always independent (b) They may be independent (c) They can not be independent (d) They can not be equally likely. Ans : (c)
17.	If a coin is tossed twice, then the events 'occurrence of one head', 'occurrence of 2 heads' and 'occurrence of no head' are (a) Independent (b) Equally likely (c) Not equally likely (d) Both (a) and (b). Ans : (c)
18.	The probability of an event can assume any value between (a) 1 and 1 (b) 0 and 1, including 0 and 1 (c) 1 and 0 (d) none of these. Ans : (b)
19.	If $P(A) = 0$, then the event A (a) will never happen (b) will always happen (c) may happen (d) may not happen. Ans : (a)
20.	If $P(A) = 1$, then the event A is known as (a) symmetric event (b) dependent event (c) improbable event (d) sure event.

	Ans : (d)
21.	If $p : q$ are the odds in favour of an event, then the probability of that event is (a) p/q (b) $p/(p+q)$ (c) $q/(p+q)$ (d) none of these. Ans : (b)
22.	If $P(A) = 5/9$, then the odds against the event A is (a) $2/9$ (b) $1/5$ (c) 4.05 (d) 5.14 Ans : (c)
23.	If A, B and C are mutually exclusive and exhaustive events, then $P(A) + P(B) + P(C)$ equals to (a) $1/3$ (b) 1 (c) 0 (d) any value between 0 and 1. Ans : (b) [SM, MTP May 19]
24.	If A denotes that a student reads in a school and B denotes that he plays cricket, then (a) $P(A \cap B) = 1$ (b) $P(A \cup B) = 1$ (c) $P(A \cap B) = 0$ (d) $P(A) = P(B)$. Ans : (c)
25.	$P(B/A)$ is defined only when (a) A is a sure event (b) B is a sure event (c) A is not an impossible event (d) B is an impossible event Ans : (c)
26.	$P(A/B')$ is defined only when (a) B is not a sure event (b) B is a sure event (c) B is an impossible event (d) B is not an impossible event. Ans : (a)
27.	For two events A and B, $P(A \cup B) = P(A) + P(B)$ only when (a) A and B are equally likely events (b) A and B are exhaustive events (c) A and B are mutually independent (d) A and B are mutually exclusive. Ans : (d)

28.	Addition Theorem of Probability states that for any two events A and B, (a) $P(A \cup B) = P(A) + P(B)$ (b) $P(A \cup B) = P(A) + P(B) + P(A \cap B)$ (c) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ (d) $P(A \cup B) = P(A) \times P(B)$ Ans : (c) [SM, MTP May 19]	34.	If A and B are mutually exclusive events, then (a) $P(A) = P(A-B)$. (b) $P(B) = P(A-B)$. (c) $P(A) = P(A \cap B)$. (d) $P(B) = P(A \cap B)$. Ans : (a)
29.	For any two events A and B, (a) $P(A) + P(B) > P(A \cap B)$ (b) $P(A) + P(B) < P(A \cap B)$ (c) $P(A) + P(B) \geq P(A \cap B)$ (d) $P(A) \times P(B) \leq P(A \cap B)$ Ans : (c)	35.	If $P(A-B) = P(B-A)$, then the two events A and B satisfy the condition (a) $P(A) = P(B)$. (b) $P(A) + P(B) = 1$ (c) $P(A \cap B) = 0$ (d) $P(A \cup B) = 1$ Ans : (a)
30.	For any two events A and B, (a) $P(A-B) = P(A) - P(B)$ (b) $P(A-B) = P(A) - P(A \cap B)$ (c) $P(A-B) = P(B) - P(A \cap B)$ (d) $P(B-A) = P(B) + P(A \cap B)$. Ans : (b)	36.	The number of conditions to be satisfied by three events A, B and C for complete independence is (a) 2 (b) 3 (c) 4 (d) any number. Ans : (c)
31.	The limitations of the classical definition of probability (a) it is applicable when the total number of elementary events is finite (b) it is applicable if the elementary events are equally likely (c) it is applicable if the elementary events are mutually independent (d) (a) and (b). Ans : (d)	37.	If two events A and B are independent, then $P(A \cap B)$ (a) equals to $P(A) + P(B)$ (b) equals to $P(A) \times P(B)$ (c) equals to $P(A) \times P(B/A)$ (d) equals to $P(B) \times P(A/B)$. Ans : (b)
32.	According to the statistical definition of probability, the probability of an event A is the (a) limiting value of the ratio of the no. of times the event A occurs to the number of times the experiment is repeated (b) the ratio of the frequency of the occurrences of A to the total frequency (c) the ratio of the frequency of the occurrences of A to the non-occurrence of A (d) the ratio of the favourable elementary events to A to the total number of elementary events. Ans : (a)	38.	Values of a random variable are (a) always positive numbers. (b) always positive real numbers. (c) real numbers. (d) natural numbers. Ans : (c)
33.	The Theorem of Compound Probability states that for any two events A and B. (a) $P(A \cap B) = P(A) \times P(B/A)$ (b) $P(A \cup B) = P(A) \times P(B/A)$ (c) $P(A \cap B) = P(A) \times P(B)$ (d) $P(A \cup B) = P(B) + P(B) - P(A \cap B)$. Ans : (a)	39.	Expected value of a random variable (a) is always positive (b) may be positive or negative (c) may be positive or negative or zero (d) can never be zero. Ans : (c)
		40.	If all the values taken by a random variable are equal then (a) its expected value is zero (b) its standard deviation is zero (c) its standard deviation is positive (d) its standard deviation is a real number. Ans : (b)
		41.	If x and y are independent, then (a) $E(xy) = E(x) \times E(y)$ (b) $E(xy) = E(x) + E(y)$ (c) $E(x - y) = E(x) + E(y)$

	(d) $E(x - y) = E(x) + x E(y)$ Ans : (a)
42.	If a random variable x assumes the values x_1, x_2, x_3, x_4 with corresponding probabilities p_1, p_2, p_3, p_4 then the expected value of x is (a) $p_1 + p_2 + p_3 + p_4$ (b) $x_1 p_1 + x_2 p_3 + x_3 p_2 + x_4 p_4$ (c) $p_1 x_1 + p_2 x_2 + p_3 x_3 + p_4 x_4$ (d) none of these. Ans : (c) [SM, MTP May 19]
43.	$f(x)$, the probability mass function of a random variable x satisfies (a) $f(x) > 0$ (b) $\sum_x f(x) = 1$ (c) both (a) and (b) (d) $f(x) > 0$ and $\sum_x f(x) = 1$ Ans : (d)
44.	Variance of a random variable x is given by (a) $E(x - \mu)^2$ (b) $E[x - E(x)]^2$ (c) $E(x^2 - \mu)$ (d) (a) and (b) Ans : (d) [SM, MTP May 19]
45.	If two random variables x and y are related by $y = 2 - 3x$, then the SD of y is given by (a) $-3 \times \text{SD of } x$ (b) $3 \times \text{SD of } x$ (c) $9 \times \text{SD of } x$ (d) $2 \times \text{SD of } x$ Ans : (b)
46.	Probability of getting a head when two unbiased coins are tossed simultaneously is (a) $1/4$ (b) $1/2$ (c) 0.20 (d) 0.75 Ans : (b)
47.	If an unbiased coin is tossed twice, the probability of obtaining at least one tail is (a) $1/4$ (b) $1/2$ (c) 0.75 (d) 1.00 Ans : (c)
48.	If an unbiased die is rolled once, the odds in favour of getting a point which is a multiple of 3 is (a) $1:2$

	(b) $2:1$ (c) $1:3$ (d) $3:1$ Ans : (a) [SM, MTP May 19]
49.	A bag contains 15 one rupee coins, 25 two rupee coins and 10 five rupee coins. If a coin is selected at random from the bag, then the probability of not selecting a one rupee coin is (a) $2/7$ (b) $2/3$ (c) 0.25 (d) 0.20 Ans : (b)
50.	A, B, C are three mutually independent with probabilities $0.3, 0.2$ and 0.4 respectively. What is $P(A \cap B \cap C)$? (a) $2/5$ (b) $1/4$ (c) 0.024 (d) 0.500 Ans : (c) [SM, MTP May 19]
51.	If two letters are taken at random from the word HOME, what is the Probability that none of the letters would be vowels? (a) $1/6$ (b) $1/2$ (c) $1/3$ (d) $1/4$ Ans : (a) [SM, MTP May 18, Nov 18, June 24]
52.	If a card is drawn at random from a pack of 52 cards, what is the chance of getting a Spade or an ace? (a) $4/13$ (b) $5/13$ (c) 0.25 (d) 0.20 Ans : (a) [SM, MTP May 19, May 20, May 21, Nov 23, July 24]
53.	If x and y are random variables having expected values as 4.5 and 2.5 respectively, then the expected value of $(x-y)$ is (a) 2 (b) 7 (c) 6 (d) 0 Ans : (a)

54.	If variance of a random variable x is 23, then what is the variance of $2x+10$?
	(a) 56
	(b) 33
	(c) 46
	(d) 92
	Ans : (d)

55.	What is the probability of having at least one 'six' from 3 throws of a perfect die?
	(a) $5/6$
	(b) $(5/6)^3$
	(c) $1 - (1/6)^3$
	(d) $1 - (5/6)^3$
	Ans : (d)

SET B

1.	Two balls are drawn from a bag containing 5 white and 7 black balls at random. What is the probability that they would be of different colours?
	(a) $35/66$
	(b) $30/66$
	(c) $12/66$
	(d) None of these
	Ans : (a)
2.	What is the chance of throwing at least 7 in a single cast with 2 dice?
	(a) $5/12$
	(b) $7/12$
	(c) $1/4$
	(d) $17/36$
	Ans : (b)
	[SM, MTP May 21, May 19]
3.	What is the chance of getting at least one defective item if 3 items are drawn randomly from a lot containing 6 items of which 2 are defective item?
	(a) 0.30
	(b) 0.20
	(c) 0.80
	(d) 0.50
	Ans : (c)
4.	If two unbiased dice are rolled together, what is the probability of getting no difference of points?
	(a) $1/2$
	(b) $1/3$
	(c) $1/5$
	(d) $1/6$
	Ans : (d)
5.	If A, B and C are mutually exclusive independent and exhaustive events then what is the probability that they occur simultaneously?
	(a) 1
	(b) $1/2$
	(c) 0

	(d) any value between 0 and 1
	Ans : (c)
6.	There are 10 balls numbered from 1 to 10 in a box. If one of them is selected at random, what is the probability that the number printed on the ball would be an odd number greater than 4?
	(a) 0.50
	(b) 0.40
	(c) 0.60
	(d) 0.30
	Ans : (d)
7.	Following are the wages of 8 workers in rupees: 50, 62, 40, 70, 45, 56, 32, 45. If one of the workers is selected at random, what is the probability that his wage would be lower than the average wage?
	(a) 0.625
	(b) 0.500
	(c) 0.375
	(d) 0.450
	Ans : (b)
	[SM, MTP Nov 21]
8.	A, B and C are three mutually exclusive and exhaustive events such that $P(A) = 2P(B) = 3P(C)$. What is $P(B)$?
	(a) $6/11$
	(b) $3/11$
	(c) $1/6$
	(d) $1/3$
	Ans : (b)
	[SM, MTP Nov 18]
9.	For two events A and B, $P(B) = 0.3$, $P(A \text{ but not } B) = 0.4$ and $P(\text{not } A) = 0.6$. The events A and B are
	(a) exhaustive
	(b) independent
	(c) equally likely
	(d) mutually exclusive
	Ans : (d)
10.	A bag contains 12 balls which are numbered

	from 1 to 12. If a ball is selected at random, what is the probability that the number of the ball will be a multiple of 5 or 6 ? (a) 0.30 (b) 0.25 (c) 0.20 (d) $1/3$ Ans : (d)
11.	Given that for two events A and B, $P(A) = 3/5$, $P(B) = 2/3$ and $P(A \cup B) = 3/4$, what is $P(A/B)$? (a) 0.655 (b) $13/60$ (c) $31/60$ (d) 0.775 Ans : (d) [SM, MTP Nov 21, May 22, RTP Sep 24]
12.	For two independent events A and B, what is $P(A+B)$, given $P(A) = 3/5$ and $P(B) = 2/3$? (a) $11/15$ (b) $13/15$ (c) $7/15$ (d) 0.65 Ans : (b)
13.	If $P(A) = p$ and $P(B) = q$, then (a) $P(A/B) \leq p/q$ (b) $P(A/B) < p/q$ (c) $P(A/B) \leq q/p$ (d) None of these Ans : (a)
14.	If $P(\bar{A} \cup \bar{B}) = 5/6$, $P(A) = 1/2$ and $P(\bar{B}) = 2/3$, what is $P(A \cup B)$? (a) $1/3$ (b) $5/6$ (c) $2/3$ (d) $4/9$ Ans : (c)
15.	If for two independent events A and B, $P(A \cup B) = 2/3$ and $P(A) = 2/5$, what is $P(B)$? (a) $4/15$ (b) $4/9$ (c) $5/9$ (d) $7/15$ Ans : (b)
16.	If $P(A) = 2/3$, $P(B) = 3/4$, $P(A/B) = 2/3$, then what is $P(B/A)$? (a) $1/3$ (b) $2/3$ (c) $3/4$ (d) $1/2$

	Ans : (c)
17.	If $P(A) = a$, $P(B) = b$ and $P(A \cap B) = c$ then the expression of $P(A' \cap B')$ in terms of a, b and c is (a) $1 - a - b - c$ (b) $a + b - c$ (c) $1 + a - b - c$ (d) $1 - a - b + c$ Ans : (d)
18.	For three events A, B and C, the probability that only A occur is (a) $P(A)$ (b) $P(A \cup B \cup C)$ (c) $P(A' \cap B \cap C)$ (d) $P(A \cap B' \cap C')$ Ans : (d)
19.	It is given that a family of 2 children has a girl, what is the probability that the other child is also a girl ? (a) 0.50 (b) 0.75 (c) $1/3$ (d) $2/3$ Ans : (c)
20.	Two coins are tossed simultaneously. What is the probability that the second coin would show a tail given that the first coin has shown a head? (a) 0.50 (b) 0.25 (c) 0.75 (d) 0.125 Ans : (a)
21.	If a random variable x assumes the values 0, 1 and 2 with probabilities 0.30, 0.50 and 0.20, then its expected value is (a) 1.50 (b) 3 (c) 0.90 (d) 1 Ans : (c)
22.	If two random variables x and y are related as $y = -3x + 4$ and standard deviation of x is 2, then the standard deviation of y is (a) 6 (b) 6 (c) 18 (d) 3.50 Ans : (b)
23.	If $2x + 3y + 4 = 0$ and $v(x) = 6$ then $v(y)$ is

	(a) $\frac{8}{3}$ (b) 9 (c) - 9 (d) 6 Ans : (a)

SET C

1.	What is the probability that a leap year selected at random would contain 53 Saturdays? (a) $\frac{1}{7}$ (b) $\frac{2}{7}$ (c) $\frac{1}{12}$ (d) $\frac{1}{4}$ Ans : (b) [SM, MTP Nov 21]
2.	What is the probability that a leap year is has 53 Sundays or 53 Mondays (a) $\frac{2}{7}$ (b) $\frac{3}{7}$ (c) $\frac{4}{7}$ (d) 0.142857142857143 Ans : (c) [MTP Nov 20]
3.	79 . In a non-leap year, the probability of getting 53 Sundays or 53 Tuesday or 53 Thursday is (a) $\frac{4}{7}$ (b) $\frac{2}{7}$ (c) $\frac{3}{7}$ (d) $\frac{1}{7}$ Ans : (c) [MTP May 21, May 22, Nov 22, Dec 24]
4.	If an unbiased coin is tossed three times, what is the probability of getting more that one head? (a) $\frac{1}{8}$ (b) $\frac{3}{8}$ (c) $\frac{1}{2}$ (d) $\frac{1}{3}$ Ans : (c) [SM, MTP June 23]
5.	If two unbiased dice are rolled, what is the probability of getting points neither 6 nor 9? (a) 0.25 (b) 0.50 (c) 0.75 (d) 0.80 Ans : (c)
6.	What is the probability that 4 children

	selected at random would have different birthdays? (a) $\frac{364 \times 363 \times 362}{365^3}$ (b) $\frac{6 \times 5 \times 4}{7^3}$ (c) $\frac{1}{365}$ (d) $(\frac{1}{7})^3$ Ans : (a)
7.	A box contains 5 white and 7 black balls. Two successive drawn of 3 balls are made (i) with replacement (ii) without replacement. The probability that the first draw would produce white balls and the second draw would produce black balls are respectively (a) $\frac{6}{321}$ and $\frac{3}{926}$ (b) $\frac{1}{20}$ and $\frac{1}{30}$ (c) $\frac{35}{144}$ and $\frac{35}{108}$ (d) $\frac{7}{968}$ and $\frac{5}{264}$ Ans : (d)
8.	There are three boxes with the following composition: Box I: 5 Red + 7 White + 6 Blue balls Box II: 4 Red + 8 White + 6 Blue balls Box III: 3 Red + 4 White + 2 Blue balls If one ball is drawn at random, then what is the probability that they would be of same colour? (a) $\frac{89}{729}$ (b) $\frac{97}{729}$ (c) $\frac{82}{729}$ (d) $\frac{23}{32}$ Ans : (a)
9.	A number is selected at random from the first 1000 natural numbers. What is the probability that the number so selected would be a multiple of 7 or 11? (a) 0.25 (b) 0.32 (c) 0.22 (d) 0.33 Ans : (c)
10.	A bag contains 8 red and 5 white balls. Two successive draws of 3 balls are made without

	replacement. The probability that the first draw will produce 3 white balls and the second 3 red balls is (a) $5/223$ (b) $6/257$ (c) $7/429$ (d) $3/548$ Ans : (c) [SM, MTP May 24]
11.	There are two boxes containing 5 white and 6 blue balls and 3 white and 7 blue balls respectively. If one of the boxes is selected at random and a ball is drawn from it, then the probability that the ball is blue is (a) $115/227$ (b) $83/250$ (c) $137/220$ (d) $127/250$ Ans : (c)
12.	A problem in probability was given to three CA students A, B and C whose chances of solving it are $1/3$, $1/5$ and $1/2$ respectively. What is the probability that the problem would be solved? (a) $4/15$ (b) $7/8$ (c) $8/15$ (d) $11/15$ Ans : (d) [SM, MTP Nov 21]
13.	A probability in statistics is given to five students A, B, C, D and E. Their chances of is $\frac{1}{2}$, $1/3$, $1/4$, $1/5$, $1/6$. What's the probability that the problem will be solved (a) $1/6$ (b) $5/6$ (c) 1 (d) none of these Ans : (b) [MTP Nov 18]
14.	There are three persons aged 60, 65 and 70 years old. The survival probabilities for these three persons for another 5 years are 0.7, 0.4 and 0.2 respectively. What is the probability that at least two of them would survive another five years? (a) 0.425 (b) 0.456 (c) 0.392 (d) 0.388

	Ans : (d)
15.	Tom speaks truth in 30 percent cases and Dick speaks truth in 25 percent cases. What is the probability that they would contradict each other? (a) 0.325 (b) 0.400 (c) 0.925 (d) 0.075 Ans : (b)
16.	There are two urns. The first urn contains 3 red and 5 white balls whereas the second urn contains 4 red and 6 white balls. A ball is taken at random from the first urn and is transferred to the second urn. Now another ball is selected at random from the second urn. The probability that the second ball would be red is (a) $7/20$ (b) $35/88$ (c) $17/52$ (d) $3/20$ Ans : (b)
17.	For a group of students, 30 %, 40% and 50% failed in Physics , Chemistry and at least one of the two subjects respectively. If an examinee is selected at random, what is the probability that he passed in Physics if it is known that he failed in Chemistry? (a) $1/2$ (b) $1/3$ (c) $1/4$ (d) $1/6$ Ans : (a)
18.	A packet of 10 electronic components is known to include 2 defectives. If a sample of 4 components is selected at random from the packet, what is the probability that the sample does not contain more than 1 defective? (a) $1/3$ (b) $2/3$ (c) $13/15$ (d) $3/15$ Ans : (c) [SM, MTP Nov 21]
19.	8 identical balls are placed at random in three bags. What is the probability that the first bag will contain 3 balls? (a) 0.2731 (b) 0.3256

	(c) 0.1924 (d) 0.3443 Ans : (a)												
20.	X and Y stand in a line with 6 other people. What is the probability that there are 3 persons between them? (a) 1/5 (b) 1/6 (c) 1/7 (d) 1/3 Ans : (c) [SM, MTP May 22, RTP Sep 24]												
21.	Given that $P(A) = 1/2$, $P(B) = 1/3$, $P(A \cap B) = 1/4$, what is $P(A' \cup B')$? (a) 1/2 (b) 7/8 (c) 5/8 (d) 2/3 Ans : (c) [SM, MTP Nov 18]												
22.	Four digits 1, 2, 4 and 6 are selected at random to form a four digit number. What is the probability that the number so formed, would be divisible by 4? (a) 1/2 (b) 1/5 (c) 1/4 (d) 1/3 Ans : (d)												
23.	The probability distribution of a random variable x is given below: <table><tr><td>x</td><td>1</td><td>2</td><td>4</td><td>5</td><td>6</td></tr><tr><td>P</td><td>0.15</td><td>0.25</td><td>0.20</td><td>0.30</td><td>0.10</td></tr></table> What is the standard deviation of x ? (a) 1.49 (b) 1.56 (c) 1.69 (d) 1.72 Ans : (c) [SM, MTP May 22]	x	1	2	4	5	6	P	0.15	0.25	0.20	0.30	0.10
x	1	2	4	5	6								
P	0.15	0.25	0.20	0.30	0.10								
24.	A packet of 10 electronic components is known to include 3 defectives. If 4 components are												

	selected from the packet at random, what is the expected value of the number of defective? (a) 1.20 (b) 1.21 (c) 1.69 (d) 1.72 Ans : (a)												
25.	The probability that there is at least one error in an account statement prepared by 3 persons A, B and C are 0.2, 0.3 and 0.1 respectively. If A, B and C prepare 60, 70 and 90 such statements, then the expected number of correct statements (a) 170 (b) 176 (c) 178 (d) 180 Ans : (C) [SM, MTP Nov 21]												
26.	A bag contains 6 white and 4 red balls. If a person draws 2 balls and receives ` 10 and ` 20 for a white and red balls respectively, then his expected amount is (a) Rs 25 (b) Rs 26 (c) Rs 29 (d) Rs 28 Ans : (d) [SM, MTP Nov 21]												
27.	The probability distribution of a random variable is as follows: <table><tr><td>x:</td><td>1</td><td>2</td><td>4</td><td>6</td><td>8</td></tr><tr><td>P:</td><td>k</td><td>2k</td><td>3k</td><td>3k</td><td>k</td></tr></table> The variance of x is (a) 2.1 (b) 4.41 (c) 2.32 (d) 2.47 Ans : (b) [SM, MTP Nov 18]	x:	1	2	4	6	8	P:	k	2k	3k	3k	k
x:	1	2	4	6	8								
P:	k	2k	3k	3k	k								

ADDITIONAL QUESTION BANK

1.	All possible outcomes of a random experiment forms the (a) events (b) sample space (c) both

	(d) none Ans : (b)
2.	If one of outcomes cannot be expected to occur in preference to the other in an experiment the events are

	(a) simple events (b) compound events (c) favourable events (d) equally likely events Ans : (d)
3.	If two events cannot occur simultaneously in the same trial then they are (a) mutually exclusive events (b) simple events (c) favourable events (d) none Ans : (a)
4.	When the number of cases favourable to the event A is none then $P(A)$ is equal to (a) 1 (b) 0 (c) $1/2$ (d) none Ans : (b)
5.	A card is drawn from a well-shuffled pack of playing cards. The probability that it is a spade is (a) 0 (b) $1/4$ (c) $3/13$ (d) none Ans : (b)
6.	A card is drawn from a well-shuffled pack of playing cards. The probability that it is a king is (a) 0 (b) $1/4$ (c) $4/13$ (d) none Ans : (a)
7.	A card is drawn from a well-shuffled pack of playing cards. The probability that it is the ace of clubs is (a) 0 (b) $1/4$ (c) $1/52$ (d) none Ans : (c)
8.	In a single throw with two dice the probability of getting a sum of five on the two dice is (a) $1/9$ (b) $1/7$ (c) $5/9$ (d) none

	Ans : (a)																
9.	In a single throw with two dice, the probability of getting a sum of six on the two dice is (a) $1/9$ (b) $1/7$ (c) $5/9$ (d) none Ans : (b)																
10.	The probability that exactly one head appears in a single throw of two fair coins is (a) $3/4$ (b) $1/2$ (c) $1/4$ (d) none Ans : (b)																
11.	The probability that at least one head appears in a single throw of three fair coins is (a) $1/8$ (b) $7/8$ (c) $1/3$ (d) none Ans : (b)																
12.	The definition of probability fails when the no of possible outcomes of the experiment is infinite (a) TRUE (b) FALSE (c) both (d) none Ans : (a)																
13.	The following table gives distribution of wages of 100 workers - <table><tr><td>Wag es (in Rs.)</td><td>12 0- 14 0</td><td>14 0- 16 0</td><td>16 0- 18 0</td><td>18 0- 20 0</td><td>20 0- 22 0</td><td>22 0- 24 0</td><td>24 0- 26 0</td></tr><tr><td>No. of work ers</td><td>9</td><td>20</td><td>0</td><td>10</td><td>8</td><td>35</td><td>18</td></tr></table> The probability that his wages are under 140 is (a) $20/100$ (b) $9/100$ (c) $29/100$ (d) none Ans : (b)	Wag es (in Rs.)	12 0- 14 0	14 0- 16 0	16 0- 18 0	18 0- 20 0	20 0- 22 0	22 0- 24 0	24 0- 26 0	No. of work ers	9	20	0	10	8	35	18
Wag es (in Rs.)	12 0- 14 0	14 0- 16 0	16 0- 18 0	18 0- 20 0	20 0- 22 0	22 0- 24 0	24 0- 26 0										
No. of work ers	9	20	0	10	8	35	18										

14.	An individual is selected at random from the above group. The probability that his wages are under ` 160 is (a) 9/100 (b) 20/100 (c) 29/100 (d) none Ans : (c)										
15.	For the above table the probability that his wages are above ` 200 is (a) 43/100 (b) 35/100 (c) 53/100 (d) 61/100 Ans : (d)										
16.	For the above table the probability that his wages between ` 160 and 220 is (a) 30/100 (b) 10/100 (c) 38/100 (d) 18/100 Ans : (d)										
17.	The table below shows the history of 1000 men : <table border="1"><tr><td>Life (in years)</td><td>60</td><td>70</td><td>80</td><td>90</td></tr><tr><td>No. Survived</td><td>1000</td><td>500</td><td>100</td><td>60</td></tr></table> The probability that a man will survived to age 90 is (a) 60/1000 (b) 160/1000 (c) 660/1000 (d) none Ans : (a)	Life (in years)	60	70	80	90	No. Survived	1000	500	100	60
Life (in years)	60	70	80	90							
No. Survived	1000	500	100	60							
18.	The terms "chance" and probability are synonymous (a) TRUE (b) FALSE (c) both (d) none Ans : (a)										
19.	If probability of drawing a spade from a well-shuffled pack of playing cards is $\frac{1}{4}$ then the probability that of the card drawn from a well-shuffled pack of playing cards is 'not a spade' is (a) 1 (b) $\frac{1}{2}$ (c) $\frac{1}{4}$ (d) $\frac{3}{4}$ Ans : (d)										

20.	Sum of probability of events in sample space is (a) 0 (b) $\frac{1}{2}$ (c) 1 (d) none Ans : (c)
21.	Sum of all probabilities of mutually exclusive and exhaustive events is equal to (a) 0 (b) $\frac{1}{2}$ (c) $\frac{3}{4}$ (d) 1 Ans : (d)
22.	Let a sample space be $S = \{X_1, X_2, X_3\}$ which of the following defines probability space on S ? (a) $P(X_1)=\frac{1}{4}, P(X_2)=\frac{1}{3}, P(X_3)=\frac{1}{3}$ (b) $P(X_1)=0, P(X_2)=\frac{1}{3}, P(X_3)=\frac{2}{3}$ (c) $P(X_1)=\frac{2}{3}, P(X_2)=\frac{1}{3}, P(X_3)=\frac{2}{3}$ (d) none Ans : (b)
23.	Let P be a probability function on $S = \{X_1, X_2, X_3\}$ if $P(X_1) = \frac{1}{4}$ and $P(X_3) = \frac{1}{3}$ then P (X ₂) is equal to (a) $\frac{3}{7}$ (b) $\frac{3}{5}$ (c) $\frac{3}{4}$ (d) none Ans : (a)
24.	The chance of getting a sum of 10 in a single throw with two dice is (a) $\frac{10}{36}$ (b) $\frac{1}{12}$ (c) $\frac{5}{36}$ (d) None Ans : (b) [SM, MTP Nov 23, July 24]
25.	The chance of getting a sum of 6 in a single throw with two dice is (a) $\frac{3}{36}$ (b) $\frac{4}{36}$ (c) $\frac{6}{36}$ (d) $\frac{5}{36}$ Ans : (d)
26.	P (B/A) defines the probability that event B occurs on the assumption that A has happened (a) Yes (b) no (c) both

	(d) none Ans : (a)
27.	The complete group of all possible outcomes of a random experiment given an _____ set of events. (a) mutually exclusive (b) exhaustive (c) both (d) none Ans : (b)
28.	When the event is 'certain' the probability of it is (a) 0 (b) $1/2$ (c) 1 (d) none Ans : (c)
29.	The classical definition of probability is based on the feasibility at subdividing the possible outcomes of the experiments into (a) mutually exclusive and exhaustive (b) mutually exclusive and equally likely (c) exhaustive and equally likely (d) mutually exclusive, exhaustive and equally likely cases. Ans : (d)
30.	Two unbiased coins are tossed. The probability of obtaining 'both heads' is (a) $1/4$ (b) $1/2$ (c) $3/4$ (d) none Ans : (a)
31.	Two unbiased coins are tossed. The probability of obtaining one head and one tail is (a) $1/4$ (b) $1/2$ (c) $3/4$ (d) none Ans : (b)
32.	Two unbiased coins are tossed. The probability of obtaining both tail is (a) $2/4$ (b) $3/4$ (c) $1/4$ (d) none Ans : (c)
33.	Two unbiased coins are tossed. The

	probability of obtaining at least one head is (a) $1/4$ (b) $2/4$ (c) $3/4$ (d) none Ans : (c)
34.	When two unbiased coins are tossed, the probability of obtaining 3 heads is (a) $2/4$ (b) $1/4$ (c) $3/4$ (d) 0 Ans : (d)
35.	When two unbiased coins are tossed, the probability of obtaining not more than 3 heads is (a) $3/4$ (b) $1/2$ (c) 1 (d) 0 Ans : (c)
36.	When two unbiased coins are tossed, the probability of getting both heads or both tails is (a) $1/2$ (b) $3/4$ (c) $1/4$ (d) none Ans : (a)
37.	Two dice with face marked 1, 2, 3, 4, 5, 6 are thrown simultaneously and the points on the dice are multiplied together. The probability that product is 12 is (a) $4/36$ (b) $5/36$ (c) $12/36$ (d) none Ans : (a)
38.	A bag contain 6 white and 5 black balls. One ball is drawn. The probability that it is white is (a) $5/11$ (b) 1 (c) $6/11$ (d) $1/11$ Ans : (c)
39.	Probability of occurrence of at least one of the events A and B is denoted by (a) $P(AB)$

	(b) $P(A+B)$ (c) $P(A/B)$ (d) none Ans : (b)
40.	Probability of occurrence of A as well as B is denoted by (a) $P(AB)$ (b) $P(A+B)$ (c) $P(A/B)$ (d) none Ans : (a)
41.	Which of the following relation is true ? (a) $P(A) - P(A^c) = 1$ (b) $P(A) + P(A^c) = 1$ (c) $P(A) P(A^c) = 1$ (d) none Ans : (b)
42.	If events A and B are mutually exclusive, the probability that either A or B occurs is given by (a) $P(A+B) = P(A) - P(B)$ (b) $P(A+B) = P(A) + P(B) - P(AB)$ (c) $P(A+B) = P(A) - P(B) + P(AB)$ (d) $P(A+B) = P(A) + P(B)$ Ans : (d)
43.	The probability of occurrence of at least one of the 2 events A and B (which may not be mutually exclusive) is given by (a) $P(A+B) = P(A) - P(B)$ (b) $P(A+B) = P(A) + P(B) - P(AB)$ (c) $P(A+B) = P(A) - P(B) + P(AB)$ (d) $P(A+B) = P(A) + P(B)$ Ans : (B)
44.	If events A and B are independent, the probability of occurrence of A as well as B is given by (a) $P(AB) = P(A/B)$ (b) $P(AB) = P(A)/P(B)$ (c) $P(AB) = P(A)P(B)$ (d) None Ans : (c)
45.	For the condition $P(AB) = P(A)P(B)$ two events A and B are said to be (a) dependent (b) independent (c) equally like (d) none Ans : (b)
46.	The conditional probability of an event B on the assumption that another event A has actually occurred is given by

	(a) $P(B/A) = P(AB)/P(A)$ (b) $P(A/B) = P(AB)/P(B)$ (c) $P(B/A) = P(AB)$ (d) $P(A/B) = P(AB)/P(A)P(B)$ Ans : (a)
47.	Given $P(A)=1/2$, $P(B)=1/3$, $P(AB)=1/4$, the value of $P(A+B)$ is (a) $3/4$ (b) $3/5$ (c) $5/6$ (d) $1/6$ Ans : (b)
48.	Given $P(A)=1/2$, $P(B)=1/3$, $P(AB)=1/4$, the value of $P(A/B)$ is (a) $1/2$ (b) $1/6$ (c) $2/3$ (d) $3/4$ Ans : (d)
49.	If $P(A)=1/3$, $P(B)=1/4$, the events A & B are (a) not equally likely (b) mutually exclusive (c) equally likely (d) none Ans : (a)
50.	If events A and B are independent then (a) A^c and B^c are dependent (b) A^c and B are dependent (c) A and B^c are dependent (d) A^c and B^c are also independent Ans : (d)
51.	A card is drawn from each of two well-shuffled packs of cards. The probability that at least one of them is an ace is (a) 0 (b) $25/169$ (c) $2/13$ (d) none Ans : (b)
52.	When a die is tossed, the sample space is (a) $S = \{1,2,3,4,5\}$ (b) $S = \{1,2,3,4\}$ (c) $S = \{1,2,3,4,5,6\}$ (d) none Ans : (c)
53.	If $P(A) = 1/4$, $P(B) = 2/5$, $P(A+B) = 1/2$ then $P(AB)$ is equal to (a) $3/4$ (b) $2/20$ (c) $13/20$

	(d) $3/20$ Ans : (d)
54.	If events A and B are independent and $P(A) = 2/3$, $P(B) = 3/5$ then $P(A+B)$ is equal to (a) $13/15$ (b) $6/15$ (c) $1/15$ (d) none Ans : (a)
55.	The expected number of head in 100 tosses of an unbiased coin is (a) 100 (b) 50 (c) 25 (d) none Ans : (b)
56.	A and B are two events such that $P(A) = 1/3$, $P(B) = 1/4$, $P(A+B) = 1/2$, then $P(B/A)$ is equal to (a) $1/4$ (b) $1/3$ (c) $1/2$ (d) none Ans : (a)
57.	Probability mass function is always (a) 0 (b) greater than 0 (c) greater than equal to 0 (d) less than 0 Ans : (c)
58.	The sum of probability mass function is equal to (a) -1 (b) 0 (c) 1 (d) none Ans : (c)
59.	When X is a continuous function $f(x)$ is called (a) probability mass function (b) probability density function (c) both (d) none Ans : (b)
60.	Which of the following set of function define a probability space on $S = \{a_1, a_2, a_3\}$ (a) $P(a_1) = 1/3$, $P(a_2) = 1/2$, $P(a_3) = 1/4$ (b) $P(a_1) = 1/3$, $P(a_2) = 1/6$, $P(a_3) = 1/2$ (c) $P(a_1) = P(a_2) = 2/3$, $P(a_3) = 1/4$

	(d) None Ans : (b)
61.	If $P(a_1) = 0$, $P(a_2) = 1/3$, $P(a_3) = 2/3$ then $S = \{a_1, a_2, a_3\}$ is a probability space (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
62.	If two events are independent then (a) $P(B/A) = P(AB) P(A)$ (b) $P(B/A) = P(AB) P(B)$ (c) $P(B/A) = P(B)$ (d) $P(B/A) = P(A)$ Ans : (c)
63.	When expected value is negative the result is (a) favourable (b) unfavourable (c) both (d) none to the above Ans : (b)
64.	The expected value of X, the sum of the scores, when two dice are rolled is (a) 9 (b) 8 (c) 6 (d) 7 Ans : (d)
65.	Let A and B be the events with $P(A) = 1/3$, $P(B) = 1/4$ and $P(AB) = 1/12$ then $P(A/B)$ is equal to (a) $1/3$ (b) $1/4$ (c) $3/4$ (d) $2/3$ Ans : (a)
66.	Let A and B be the events with $P(A) = 2/3$, $P(B) = 1/4$ and $P(AB) = 1/12$ then $P(B/A)$ is equal to (a) $7/8$ (b) $1/3$ (c) $1/8$ (d) none Ans : (c)
67.	The odds in favour of one student passing a test are 3:7. The odds against another student passing at are 3:5. The probability that both pass is (a) $7/6$

	(b) $21/80$ (c) $9/80$ (d) $3/16$ Ans : (d)
68.	The odds in favour of one student passing a test are 3:7. The odds against another student passing at are 3:5. The probability that both fail is (a) $7/6$ (b) $21/80$ (c) $9/80$ (d) $3/16$ Ans : (b)
69.	In formula $P(B/A)$, $P(A)$ is (a) greater than zero (b) less than zero (c) equal to zero (d) greater than equal to zero Ans : (a)
70.	Two events A and B are mutually exclusive means they are (a) not disjoint (b) disjoint (c) equally likely (d) none Ans : (b)
71.	A bag contains 10 white and 10 black balls A ball is drawn from it. The probability that it will be white is (a) $1/10$ (b) 1 (c) $1/2$ (d) none Ans : (c)
72.	Two dice are thrown at a time. The probability that the numbers shown are equal is (a) $2/6$ (b) $5/6$ (c) $1/6$ (d) none Ans : (c)
73.	Two dice are thrown at a time. The probability that 'the difference of numbers shown is 1' is (a) $11/18$ (b) $5/18$ (c) $7/18$ (d) none Ans : (b)
74.	Two dice are thrown together. The

	probability that 'the event the difference of numbers shown is 2' is (a) $2/9$ (b) $5/9$ (c) $4/9$ (d) $7/9$ Ans : (a)
75.	The probability space in tossing two coins is (a) $\{(H,H),(H,T),(T,H)\}$ (b) $\{(H,T),(T,H),(T,T)\}$ (c) $\{(H,H),(H,T),(T,H), (T,T)\}$ (d) none Ans : (c)
76.	The probability of drawing a white ball from a bag containing 3 white and 8 blue balls is (a) $3/5$ (b) $3/11$ (c) $8/11$ (d) none Ans : (b)
77.	Two dice are thrown together. The probability of the event that the sum of numbers shown is greater than 5 is (a) $13/18$ (b) $15/18$ (c) 1 (d) none Ans : (a)
78.	A traffic census show that out of 1000 vehicles passing a junction point on a highway 600 turned to the right. The probability of an automobile turning the right is (a) $2/5$ (b) $3/5$ (c) $4/5$ (d) none Ans : (b)
79.	Three coins are tossed together. The probability of getting three tails is (a) $5/8$ (b) $3/8$ (c) $1/8$ (d) none Ans : (c)
80.	Three coins are tossed together. The probability of getting exactly two heads is (a) $5/8$ (b) $3/8$

	(c) $1/8$ (d) none Ans : (b)
81.	Three coins are tossed together. The probability of getting at least two heads is (a) $1/2$ (b) $3/8$ (c) $1/8$ (d) none Ans : (a)
82.	4 coins are tossed. The probability that there are 2 heads is (a) $1/2$ (b) $3/8$ (c) $1/8$ (d) none Ans : (b)
83.	If 4 coins are tossed. The chance that there should be two tails is (a) $1/2$ (b) $3/8$ (c) $1/8$ (d) none Ans : (b)
84.	If A is an event and A^c its complementary event then (a) $P(A)=P(A^c)-1$ (b) $P(A^c)=1-P(A)$ (c) $P(A)=1+P(A^c)$ (d) none Ans : (b)
85.	If $P(A)=3/8$, $P(B)=1/3$ and $P(AB)=1/4$ then $P(A^c)$ is equal to (a) $5/8$ (b) $3/8$ (c) $1/8$ (d) none Ans : (a)
86.	If $P(A)=3/8$, $P(B)=1/3$ then $P(B)$ is equal to (a) 1 (b) $1/3$ (c) $2/3$ (d) none Ans : (c)
87.	If $P(A)=3/8$, $P(B)=1/3$ and $P(AB)=1/4$ then $P(A+B)$ is (a) $13/24$ (b) $1/2$ (c) $17/24$

	(d) none Ans : (b)
88.	If $P(A)=1/5$, $P(B)=1/2$ and A and B are mutually exclusive then $P(AB)$ is (a) $7/10$ (b) $3/10$ (c) $1/5$ (d) none Ans : (d)
89.	The probability of throwing more than 4 in a single throw from an ordinary die is (a) $2/3$ (b) $1/3$ (c) 1 (d) none Ans : (b)
90.	The probability that a card drawn at random from the pack of playing cards may be either a queen or an ace is (a) $2/13$ (b) $11/13$ (c) $9/13$ (d) none Ans : (a)
91.	The chance of getting 7 or 11 in a throw of 2 dice is (a) $7/9$ (b) $5/9$ (c) $2/9$ (d) none Ans : (c)
92.	If the probability of a horse A winning a race is $1/6$ and the probability of a horse B winning the same race is $1/4$, what is the probability that one of the horses will win (a) $5/12$ (b) $7/12$ (c) $1/12$ (d) none Ans : (a)
93.	If the probability of a horse A winning a race is $1/6$ and the probability of a horse B winning the same race is $1/4$, What is the probability that none of them will win $5/12$ $7/12$ $1/12$ none Ans : (b)

94.	If $P(A) = 7/8$ then $P(AC)$ is equal to 1 0 7/8 1/8 Ans : (d)
95.	The value of $P(S)$ where S is the sample space is -1 0 1 none Ans : (c)
96.	A man can kill a bird once in three shots. The probabilities that a bird is not killed is 1/3 2/3 1 0 Ans : (b)
97.	If on an average 9 ships out of 10 return safely to a port, the probability of one ship returns safely is 1/10 8/10 9/10 none Ans : (c)
98.	If on an average 9 ships out of 10 return safely to a port, the probability of one ship does not reach safely is 1/10 8/10 9/10 none Ans : (a)
99.	The probability of winning of a person is $6/11$ and at a result he gets ₹ 77/-. The expectation of this person is ₹ 35/- ₹ 42/- ₹ 58/- none Ans : (b)
100.	A family has 2 children. The probability that both of them are boys if it is known that one of them is a boy 1 1/2 3/4 none

	Ans : (d)
101.	The Probability of the occurrence of a number greater than 2 in a throw of a die if it is known that only even numbers can occur is 1/3 1/2 2/3 none Ans : (c)
102.	A player has 7 cards in hand of which 5 are red and of these five 2 are kings. A card is drawn at random. The probability that it is a king, it being known that it is red is 2/5 3/5 4/5 none Ans : (a)
103.	In a class 40 % students read Mathematics, 25 % Biology and 15 % both Mathematics and Biology. One student is select at random. The probability that he reads Mathematics if it is known that he reads Biology is 2/5 3/5 4/5 none Ans : (b)
104.	In a class 40 % students read Mathematics, 25 % Biology and 15 % both Mathematics and Biology. One student is select at random. The probability that he reads Biology if he reads Mathematics 7/8 1/8 3/8 none Ans : (c)
105.	Probability of throwing an odd no with an ordinary six faced die is 1/2 1 -1/2 0 Ans : (a)
106.	For a event A which is certain, $P(A)$ is equal to 1

	0 -1 none Ans : (a)
107.	When none of the outcomes is favourable to the event then the event is said to be certain sample

	impossible none Ans : (c)

MTT & RTP

	If two events A and B are independent, the probability that both will occur is given by (a) $P(A) \times P(B)$ (b) $P(A) + P(B)$ (c) $P(A) + P(B) - P(A \cup B)$ (d) $P(A) + P(B) - P(A \cap B)$ Ans : (a) [MTP May 18, June 24]												
2.	If p: q is the odds in favor of an event, then the probability of that event is (a) p/q (b) $\frac{q}{p+q}$ (c) $\frac{p}{p+q}$ (d) none of these Ans : (c) [MTP May 18, June 24]												
3.	If $P(A) = 4/9$; then the odd against the event 'A' is (a) 4:9 (b) 4:5 (c) 5:4 (d) 4:14 Ans : (c) [MTP May 18, June 24]												
4.	$(A \cup B)'$ is equal to (a) $(A' \cup B)'$ (b) $A' \cap B'$ (c) $A' \cup B'$ (d) none of these Ans : B [MTP Jan 25]												
5.	Find the Expected value of the following distribution <table border="1"><tr><td>X</td><td>-20</td><td>-10</td><td>30</td><td>75</td><td>80</td></tr><tr><td>P(x)</td><td>3/20</td><td>1/5</td><td>1/2</td><td>1/10</td><td>1/20</td></tr></table> (a) 20.5	X	-20	-10	30	75	80	P(x)	3/20	1/5	1/2	1/10	1/20
X	-20	-10	30	75	80								
P(x)	3/20	1/5	1/2	1/10	1/20								

	(b) 21.5 (c) 22.5 (d) 24.5 Ans : (b) [MTT May 18, June 24]
6	The speeds of bikes follow a normal distribution model with a mean of 80 km/hr and a standard deviation of 9.4 km. /hr. Find the probability that a bike picked at random is travelling at more than 95 km/hr.? $[P(z) = P(1.60)=0.4452]$ (a) 0.0548 (b) 0.38 (c) 0.49 (d) 0.278 Ans : A [MTT June 23]
7	If a number is selected at random from the first 50 natural numbers, what will be the probability that the selected number is a multiple of 3 and 4? (a) 5/50 (b) 2/25 (c) 3/50 (d) 4/25 Ans : B [MTT June 23]
8	If $P(A)=1/3$, $P(B)=3/4$ and $P(A \cap B) = 1/6$ then $P(A/B)$ is: (a) 1/6 (b) 2/9 (c) 1/2 (d) 1/8 Ans : B [MTT June 23]
9	A machine is made of two parts A and B. The manufacturing process of each part is such that probability of defective in part A is 0.08 and that B is 0.05. What is the probability

	that the assembled part will not have any defect? (a) 0.934 (b) 0.864 (c) 0.85 (d) 0.874 Ans : D [MTP June 23]
10	A class consists of 10 boys and 20 girls of which half the boys and half the girls have blue eyes. Find the probability that a student chosen random is a boy and has blue eyes. (a) $\frac{1}{6}$ (b) $\frac{3}{5}$ (c) $\frac{1}{2}$ (d) None of these Ans : A [MTP June 23]
11	If three coins are tossed simultaneously, what is the probability of getting two heads together? (a) $\frac{1}{4}$ (b) $\frac{1}{8}$ (c) $\frac{5}{8}$ (d) $\frac{3}{8}$ Ans : A [MTP June 23]
12	Ticket numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn bears a number which is multiple of 3 or 7? (a) $\frac{1}{5}$ (b) $\frac{2}{5}$ (c) $\frac{3}{5}$ (e) None of these Ans : B [MTP June 23]
13	Three events A, B and C are mutually exclusive, exhaustive and equally likely. What is the probability of the complementary event of A? (a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{3}{7}$ (d) 1 Ans : (b) [MTP May 20, Jan 25]
14	Find the probability that a four-digit number comprising the digits 2, 5, 6 and 7 would be divisible by 4. (a) $\frac{1}{4}$

	(b) $\frac{1}{3}$ (c) $\frac{1}{3}$ (d) 1 Ans : (b) [MTP May 20, Jan 25]
15	The probability that an Accountant's job applicant has a B. Com. Degree is 0.85, that he is a CA is 0.30 and that he is both B. Com. and CA is 0.25 out of 500 applicants, how many would be B. Com. or CA? (a) 0.25 (b) 0.3 (c) 0.1 (d) 0.9 Ans : (d) [MTP May 20, Jan 25]
16	Rupesh is known to hit a target in 5 out of 9 shots whereas David is known to hit the same target in 6 out of 11 shots. What is the probability that the target would be hit once they both try? (a) $\frac{79}{99}$ (b) $\frac{10}{13}$ (c) $\frac{14}{26}$ (d) $\frac{13}{18}$ Ans : (a) [MTP May 20, Jan 25]
17	In connection with a random experiment, it is found that $P(A) = \frac{2}{3}$, $P(B) = \frac{3}{5}$ and $P(A \cup B) = \frac{5}{6}$, find $P(A/B)$ (a) $\frac{7}{8}$ (b) $\frac{1}{3}$ (c) $\frac{5}{8}$ (d) $\frac{13}{8}$ Ans : (d) [MTP May 20, Jan 25]
18	In connection with random experiment, it is found that $P(A) = \frac{2}{3}$, $P(B) = \frac{3}{5}$ and $P(A \cup B) = \frac{5}{6}$ Find $P(A'/B)$ (a) $\frac{13}{18}$ (b) $\frac{1}{2}$ (c) $\frac{13}{20}$ (d) $\frac{5}{18}$ Ans : D [MTP Nov 23, July 24]
19	In a business venture, a man can make a profit of Rs. 50,000 or incur a loss of Rs. 20,000. The probabilities of making profit or incurring loss,

	from the past experience, are known to be 0.75 and 0.25 respectively. What is his expected profit? (a) Rs. 33,500 (b) Rs. 34,500 (c) Rs. 35,500 (d) Rs. 32,500 Ans : (d) [MTP May 20, Jan 25]
20	An experiment succeeds thrice as after it fails. If the experiment is repeated 5 times, what is the probability of having no success at all? (a) $1/1023$ (b) $1/1024$ (c) $1/1005$ (d) $1/1008$ Ans : (b) [MTP May 20, Jan 25]
21	What is the probability of getting exactly 2 head in 7 tosses of a fair coin? (a) $5/64$ (b) $7/64$ (c) $7/128$ (d) $21/128$ Ans : (d) [MTP Nov 20]
22	If A and B are two events, such that $P(A) = \frac{1}{4}$, $P(B) = 1/3$ and $P(A \cup B) = 1/2$, then $P(B/A)$ is equal to (a) $3/4$ (b) $1/2$ (c) $1/4$ (d) $1/3$ Ans : (d) [MTP Nov 20]
23	What is the probability of getting neither total of 7 nor 11 when the pair of dice is tossed? (a) $7/9$ (b) $2/9$ (c) $3/9$ (d) $4/9$ Ans : (a) [MTP Nov 20]
24	The overall percentage of failures in a certain examination was 30. What is the probability that out of a group of 6 candidates at least four passed the examination? (a) 0.747331

	(b) 0.757331 (c) 0.76991 (d) 0.72339 Ans : (a) [MTP Nov 20, April 24]
25	A pair of dice rolled. If the sum of the two dice is 9, find the probability that one of the dice showed is 3 (a) $1/3$ (b) $1/4$ (c) $1/2$ (d) $1/8$ Ans : (c) [MTP Nov 20]
26	An investment consultant predicts that the odds against the price of a certain stock going up are 2:1 and odd are in favor of the price remaining the same are 1:3. What is the probability that the price of stock will go down? (a) $5/12$ (b) $7/12$ (c) $1/3$ (d) $1/4$ Ans : (a) [MTP Nov 20]
27	The odds are 9:5 against a person who is 50 years living till he is 70 and 8:6 against a person who is 60 living till he is 80. Find the probability that at least one of them will be alive after 20 years. (a) $11/14$ (b) $22/49$ (c) $31/49$ (d) $35/49$ Ans : (c) [MTP May 21]
28	If A and B are two events and $P(A) = 2/3$, $P(B) = 3/5$, $P(A \cup B) = 5/6$, then the value of $P(A' / B')$ is : (a) $\frac{1}{4}$ (b) $5/12$ (c) $5/8$ (d) $5/4$ Ans : (b) [MTP May 21]
29	Two events A & B Probabilities 0.24 and 0.52 respectively. If the probability of both A and B occurs simultaneously is 0.15. Then the

	probability that neither A nor B occur is 0.15, then the probabilities that neither A nor B is (a) 0.39 (b) 0.375 (c) 0.61 (d) 0.86 Ans : (a) [MTP Nov 18]
30	From a bag is containing 10 black and 20 white balls, a ball is drawn at random. What is the probability that is black? (a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) 1 (d) 2 Ans : (b) [MTP Nov 18]
31	The probability of A solving a problem is $\frac{7}{12}$ the odds against solving a problem (a) 5:7 (b) 4:7 (c) 5:8 (d) 4:5 Ans : (a) [MTP Nov 18]
32	If X is normal variate with mean 6 and variance 16 then the value of the probability. $P(2 \leq X \leq 10)$ is equal to . (a) $2P(2 \leq X \leq 10)$ (b) $2P(6 \leq X \leq 10)$ (c) $P(0 \leq X \leq 6)$ (d) $3P(6 \leq X \leq 10)$ Ans : (b) [MTP Nov 18]
33	If $P(A) = 1$ and $P(B) = \frac{1}{3}$ then $P(A/B) =$ (a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) 1 (d) 0.5 Ans : (c) [MTP Nov 18]
34	The odds in favour of an event is 2:3 and the odds against another event is 3:7. Find the probability that only one of the two events occurs. (a) $\frac{27}{50}$ (b) $\frac{17}{50}$ (c) $\frac{37}{50}$

	(d) none of these Ans : (a) [MTP Nov 18]								
35	If one card is drawn at random from a pack of playing cards; find the probability it is neither a hearts nor a club (a) 1/2 (b) 1/4 (c) 1/8 (d) none of these Ans: (a) [MTP Nov 19]								
36	Three balls are drawn at random from a bag containing 6 blue and 4 red balls. What is the chance that 2 balls are blue and 1 is red? (a) 1/4 (b) 3/4 (c) 1/2 (d) none of these Ans: (c) [MTP Nov 19]								
37	The probability that a person travels by a plane is $\frac{1}{5}$ and that he travels by train is $\frac{2}{3}$. Find the probability of his traveling neither by plane nor by train? (a) $\frac{13}{15}$ (b) $\frac{2}{15}$ (c) $\frac{1}{15}$ (d) none of these Ans: (b) [MTP Nov 19]								
38	Find the probability that at least 5 defective bolts will be found in a box of 200 bolts. If it is known that 2% of such bolts are expected to be defective (Given: $e^{-4} = 0.0183$) (a) 0.4717 (b) 0.3717 (c) 0.3017 (d) None of these Ans: (b) [MTP Nov 19]								
39	Let X be a random variable with the following distribution <table><tr><td>X</td><td>-2</td><td>4</td><td>8</td></tr><tr><td>P(x)</td><td>1/6</td><td>1/3</td><td>1/2</td></tr></table> Find expected value of the random variable (a) 5 (b) 6	X	-2	4	8	P(x)	1/6	1/3	1/2
X	-2	4	8						
P(x)	1/6	1/3	1/2						

	(c) 7 (d) 8 Ans: (a) [MTP Nov 19]												
40	Five coins tossed 3200 times. The number of times 5 heads appeared is (a) 500 (b) 1200 (c) 200 (d) 100 Ans: (d) [MTP Nov 19]												
41	Given that $P(A) = 1/2$, $P(B) = 1/3$, $P(AB) = 1/4$, what is $P(A/B)$ (a) 0.5 (b) 0.875 (c) 0.625 (d) 0.6666666666666667 Ans. (c) [MTP May 19]												
42	What is the probability of getting 3 heads if 6 unbiased coins are tossed simultaneously ? (a) 0.3125 (b) 0.25 (c) 0.6825 (d) 0.50 Ans.(a) [MTP May 22]												
43	Assume that the probability for rain on a day is 0.4 . An umbrella salesman can earn ` 400 per day in case of rain on that day will lose ` 100 per day if there is no rain . The expected earnings (in `) per day of the salesman is (a) 400 (b) 200 (c) 100 (d) 0 Ans.(c) [MTP May 22]												
44	Four unbiased coins are tossed simultaneously. The expected number of heads is : <table><tr><td>X:</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>P(x)</td><td>1/16</td><td>4/16</td><td>6/16</td><td>4/16</td><td>1/16</td></tr></table> (a) 1 (b) 2 (c) 3 (d) 4 Ans.(b) [MTP May 22]	X:	0	1	2	3	4	P(x)	1/16	4/16	6/16	4/16	1/16
X:	0	1	2	3	4								
P(x)	1/16	4/16	6/16	4/16	1/16								
45	The probability that a student is not a												

	swimmer is $\frac{1}{5}$, then the probability that out of five students four are swimmers is: (a) $(\frac{4}{5})^4 (\frac{1}{5})$ (b) ${}^5C_1 (\frac{1}{5})^4 (\frac{1}{5})$ (c) ${}^5C_4 (\frac{4}{5})^4 (\frac{1}{5})$ (d) None of these Ans : (c) [MTP May 22, Nov 22]								
46	A bag contains 5 Red and 4 Black balls. A ball is drawn at random from the bag and put into another bag contains 3 red and 7 black balls. A ball is drawn randomly from the second bag. What is the probability that it is red? (a) 32/99 (b) 0.3333333333333333 (c) 74/99 (d) None of these Ans : 1 [MTP May 22]								
47	A husband and a wife appear in an interview for two vacancies in the same post. The probability of husband's selection is 3/5 and that of wife's selection is 1/5. Then the probability that only one of them is selected is 3/5 and that of wife's selection is 1/5. Then the probability that only one of them (a) 16/25 (b) 17/25 (c) 14/25 (d) None of these Ans : 3 [MTP May 22]								
48	From the following probability distribution table, find E(x). <table><tr><td>X:</td><td>1</td><td>2</td><td>3</td></tr><tr><td>F(x):</td><td>$\frac{1}{2}$</td><td>1/3</td><td>1/6</td></tr></table> (a) 1 (b) 1.50 (c) 1.67 (d) None of these Ans : 3 [MTP May 22, May 21, May 24]	X:	1	2	3	F(x):	$\frac{1}{2}$	1/3	1/6
X:	1	2	3						
F(x):	$\frac{1}{2}$	1/3	1/6						
49	If $P(A) = \frac{1}{2}$; $P(B) = \frac{1}{3}$ and $P(A \cap B) = \frac{1}{4}$ then the value of P (AUB) is: (a) $\frac{1}{4}$ (b) $\frac{3}{4}$ (c) $\frac{2}{5}$ (d) None of these Ans : (b)								

[MTP May 22]																						
50	What is the chance of picking a spade or an ace not of spade from a pack of 52 cards? (a) $4/13$ (b) $2/13$ (c) $3/26$ (d) $3/18$ Ans : A																					
[MTP Jan 25]																						
51	Find the probability of a success for the binomial distribution satisfying the following relation $4 P (x = 4) = P (x = 2)$ and having the parameter n as six. (a) $1/3$ (b) $1/2$ (c) $1/5$ (d) $1/8$ Ans : A																					
[MTP Jan 25]																						
52	A bag contains 4 Red and 5 Black balls. Another bag contains 5 Red and 3 Black balls. If one ball is drawn at random each bag. Then the probability that one Red and One Black is (a) $12/72$ (b) $25/72$ (c) $37/72$ (d) $13/72$ Ans : (c)																					
[MTP Nov 21]																						
53	The probability distribution of the demand for a commodity is given below <table border="1"><tr><td>Probability: $P(x)$</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>Probability: $P(x)$</td><td>0.0</td><td>0.1</td><td>0.3</td><td>0.4</td><td>0.1</td><td>0.0</td></tr><tr><td></td><td>5</td><td>0</td><td>0</td><td>0</td><td>0</td><td>5</td></tr></table> The expected value of demand will be (a) 7.55 (b) 7.85 (c) 1.25 (d) 8.35 Ans : (a)	Probability: $P(x)$	5	6	7	8	9	10	Probability: $P(x)$	0.0	0.1	0.3	0.4	0.1	0.0		5	0	0	0	0	5
Probability: $P(x)$	5	6	7	8	9	10																
Probability: $P(x)$	0.0	0.1	0.3	0.4	0.1	0.0																
	5	0	0	0	0	5																
[MTP Nov 21]																						
54	Two different dice are thrown simultaneously, then the probability, that the sum of two numbers appearing on the top of dice 9 is (a) $8/9$ (b) $1/9$ (c) $7/9$ (d) None of these Ans : (b)																					
[MTP Nov 21]																						

55	A coin is tossed six times, then the probability of obtaining heads and tails alternatively is (a) $\frac{1}{2}$ (b) $1/64$ (c) $1/32$ (d) $1/16$ Ans : (c)
[MTP Nov 21]	
56	An unbiased coin is tossed 6 times. Find the probability that the tosses result in heads only (a) $1/64$ (b) $5/64$ (c) $10/64$ (d) None of these Ans : (a)
[MTP Nov 21]	
57	The probability that a man aged 45 years will die within a year is 0.012. What is the probability that of 10 men, at least 9 will reach their 46th birthday? [Given: $e^{-0.12} = 0.88692$] (a) 0.0935 (b) 0.9934 (c) 0.9335 (d) 0.9555 Ans : (b)
[MTP Dec 24, Dec 23]	
58	The overall percentage of failure in a certain examination is 0.30. What is the probability that out of a group of 6 candidates at least 4 passed the examination? (a) 0.74 (b) 0.71 (c) 0.59 (d) 0.67 Ans : D
[MTP Dec 24]	
59	A card is drawn from a well shuffled pack of 52 cards. Let E_1 "a king or a queen is drawn" & E_2: "a queen or a jack is drawn", then: (a) E_1 and E_2 are not independent (b) E_1 and E_2 are mutually exclusive (c) E_1 and E_2 are independent (d) None of these Ans : B
[MTP Dec 24]	
60	The theory of compound probability states that for any two events A and B: (a) $P(A \cap B) = P(A) \times P(B)$ (b) $P(A \cap B) = P(A) \times P(B/A)$ (c) $P(A \cup B) = P(A) \times P(B/A)$

	(d) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ Ans : B [MTP Dec 24, April 24]
61	Three identical dice are rolled. The probability that the same number will appear on each of them is: (a) $1/6$ (b) $1/12$ (c) $1/36$ (d) 1 Ans : C [MTP Dec 24, April 24]
62	A bag contains 3 white and 5 black balls and second bag contains 4 white and 2 black balls. If one ball is taken from each bag, the probability that both balls are white is (a) $1/3$ (b) $\frac{1}{4}$ (c) $\frac{1}{2}$ (d) None of these Ans : A [MTP Dec 24]
63	Two unbiased dice are thrown. The expected value of sum of numbers on the upper side is (a) 3.5 (b) 7 (c) 12 (d) 6 Ans : B [MTP Dec 24]
64	Out of 1000 persons, 25 per cent were industrial workers and the rest were agricultural workers. 300 persons enjoyed world cup matches on T.V. 30 per cent of the people who had not watched world cup matches were industrial workers. What is the number of agricultural workers who had enjoyed world cup matches on TV ? (a) 230 (b) 250 (c) 240 (d) 260 Ans : d [MTP Dec 24]
65	A bag contains 15 one rupee coins, 25 two rupee coins and 10 five rupee coins. If a coin is selected at random from the bag, then the probability of not selecting a one rupee coin is: (a) 0.30 (b) 0.70

	(c) 0.25 (d) 0.20 Ans : (b) [MTP April 24]
66	The odds in favour of A solving a problem is 5:7 and Odds against B solving the same problem is 9:6. What is the probability that if both of them try, the problem will be solved? (a) $117/180$ (b) $181/200$ (c) $147/180$ (d) $119/180$ Ans : (a) [MTP April 24]
67	$P(A) = 2/3$; $P(B) = 3/5$; $P(A \cup B) = 5/6$. Find $P(B/A)$ (a) $11/20$ (b) $13/20$ (c) $13/18$ (d) $15/20$ Ans : (b) [MTP April 24]
68	If 10 men, among whom are A and B, stand in a row, what is the probability that there will be exactly 3 men between A and B ? (a) $11/15$ (b) $4/15$ (c) $1/15$ (d) $2/15$ Ans : (d) [MTP April 24]
69	In a certain manufacturing process, 5% of the tools produced turn out to be defective. Find the probability that in a sample of 40 tools, at most 2 will be defective: [Given: $e^{-2} = 0.135$] (a) 0.555 (b) 0.932 (c) 0.785 (d) 0.675 Ans : (d) [MTP April 24]
70	A card is drawn from a pack of playing cards at random. What is the probability that the card drawn a king or red colour? (a) $\frac{1}{4}$ (b) $4/13$ (c) $7/13$ (d) $\frac{1}{2}$ Ans: (c) [MTP May 21]

71	A bag contains 12 balls of which 3 are red and 5 balls are drawn at random. Find the probability that 5 balls 3 are red (a) $3/132$ (b) $5/396$ (c) $1/36$ (d) $1/22$ Ans: (d) [MTP May 21]
72	$P(A) = 0.45$, $P(B) = 0.36$ and $P(A \cap B) = 0.25$ then $P(A/B) = ?$ a. 1.40 b. 1.80 c. 0.714 d. 0.556 Ans: (c) [MTP May 21]
73	In a survey of 300 companies, the number of companies using different Media-Newspapers (N), Radio (R) and Television (T) are as follows: $n(N) = 200$, $n(R) = 100$, $n(T) = 40$, $n(N \cap R) = 50$, $n(R \cap T) = 20$, $n(N \cap R) = 25$, and $n(N \cap R \cap T) = 5$, Find the numbers of companies using none of these media: (a) 20 companies (b) 250 companies (c) 30 companies (d) 50 companies Ans: (d) [MTP May 21, Nov 23, July 24]
74	A die is thrown 100 times .if getting an even number is considered a success then the variance number of success. (a) 50 (b) 25 (c) 10 (d) 100 Ans : B [MTP Nov 23, July 24]
75	The probability that A speaks truth is $4/5$ while this probability for B is $3/4$. The probability that they contradict each other when asked to speak on a fact is (a) $3/20$ (b) $1/5$ (c) $7/20$ (d) $4/5$ Ans : C [MTP Nov 23]
76	A dice is rolled thrice , if getting a four is

	considered a success , find the variance of the probability distribution of number of successes (a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $5/12$ (d) $7/12$ Ans : C [MTP Nov 23]								
77	If $P(A \cap B) = 0.10$, and $P(B')= 0.80$, then $P(A/B)$ is (a) 0.25 (b) 0.40 (c) 0.50 (d) 0.75 Ans : C [MTP Nov 23]								
78	A number is selected at random from the set $\{1, 2, \dots, 99\}$. The probability that it is divisible by 9 or 11 is (a) $19/100$ (b) $19/99$ (c) $10/100$ (d) $10/99$ Ans : (b) [MTP July 24]								
79	A random variable has the following probability distribution: <table><tr><td>X</td><td>2</td><td>3</td><td>5</td></tr><tr><td>P</td><td>K</td><td>2K</td><td>2K</td></tr></table> Find K $\frac{1}{3}$ $\frac{2}{5}$ $\frac{1}{5}$ $\frac{2}{3}$ Ans : (c) [MTP July 24]	X	2	3	5	P	K	2K	2K
X	2	3	5						
P	K	2K	2K						
80	A speaks truth in 75% cases and B in 60% of the cases. In what percentage of the cases are they likely to contradict each other, narrating the same incident? (a) 0.60 (b) 0.45 (c) 0.65 (d) 0.35 Ans : B [MTP Dec 23]								
81	Exactly 3 girls are to be selected from 5 girls and 3 boys. The Probability of selecting 3 girls will be $\frac{5}{28}$								

	1/56 15/28 None of these Ans : A [MTP Dec 23]
82	In how many ways can be 'REGULATION' be arranged so that the vowels come at odd places 1/252 1/144 144/252 None of these Ans : A [MTP Dec 23]
83	If X and Y are two random variables and if $E(X) = 3$ and $E(Y) = 6$, then $E(XY) = ?$ (a) 3 (b) 6 (c) 18 (d) 24 Ans : (c) [MTP Nov 21]
84	Probability of Ramesh & Deepak speaking truth is $1/4, 3/5$. Find the probability of atmost one of them speaks truth. (a) 0.60 (b) 0.85 (c) 0.75 (d) None of these Answer(b) [MTP June 23]
85	If two dice are thrown then what is the probability that the sum of the faces of dice are square or cube number? (a) $1/4$ (b) $1/2$ (c) $1/3$ (d) None of these Answer(c) [MTP June 23]
86	A number is selected at random from first 70 natural numbers. What is the chance that it is a multiple of either 5 or 14? (a) $6/35$ (b) $8/35$ (c) $10/35$ (d) None of these Answer(d) [MTP June 23]
87	In a poker set there are 90 chips numbered

	from 1 to 90. Dan picks 3 chips at random, one after the other, without replacement. What is the probability that the numbers on the chips, in the order that he picks them are in descending order? (a) $1/3$ (b) $1/30$ (c) $1/6$ (d) None of these Answer(c) [MTP June 23]
88	From a deck of 52 cards, two cards are drawn at random. What is the probability that they are a king and a queen, if the cards are drawn one after the other without replacement? (a) $4/52 \times 4/51$ (b) $2 \times 4/52 \times 4/51$ (c) $4/52 \times 3/51 \times 4/52 \times 3/51$ (d) None of these Answer(b) [MTP June 23]
89	If a card is drawn randomly from a deck, the probability of the card being neither a red card nor a face card? (a) $5/13$ (b) $6/17$ (c) $12/27$ (d) $5/7$ Answer(a) [MTP June 23]
90	The probability of a man hitting the target is $1/4$. If he fires 7 times, the probability of hitting the target at least twice is : $1 - \left(\frac{5}{4}\right)\left(\frac{3}{4}\right)^6$ $1 - \left(\frac{15}{2}\right)\left(\frac{3}{4}\right)^6$ $1 - \left(\frac{5}{6}\right), 3^5$ $1 - \left(\frac{3}{4}\right)^6$ Ans : (a) [MTP Nov 22]
91	A card is drawn from a pack of playing cards and then another card is drawn without the first being replaced. What is the probability of getting two kings: (a) $7/52$ (b) $1/221$ (c) $3/221$ (d) none of these.

	Ans : (b) [MTP Nov 22]
92	A candidate is selected for interview for 3 posts. For the first there are 3 candidates, for the second there are 4 and for the third there are 2. What are the chances of his getting at least one post? (a) $\frac{3}{4}$ (b) $\frac{2}{3}$ (c) $\frac{1}{10}$ (d) 1 Ans : (a) [MTP Nov 22]
93	A speaks truth in 60% of the cases and B in 90% of the cases. In what percentage of cases are they likely to contradict each other in stating the same fact: (a) 36% (b) 42% (c) 54% (d) none of these. Ans : (b) [MTP Nov 22]
94	Let P be a probability function on $S = \{X_1, X_2, X_3\}$ if $P(X_1) = \frac{1}{4}$ and $P(X_3) = \frac{1}{3}$ then $P(X_2)$ is equal to: (a) $\frac{5}{12}$ (b) $\frac{7}{12}$ (c) $\frac{3}{4}$ (d) none of these Ans : (a) [MTP Nov 22]
95	The odds in favour of event A in a trail is 3:1. In a three independent trails, the probability of non occurrence of the event A is (a) $\frac{1}{64}$ (b) $\frac{1}{32}$ (c) $\frac{1}{27}$ (d) $\frac{1}{8}$ Ans : (a) [MTP Nov 22]
96	Thirty balls are serially numbered and placed in bag. Find chance that the first ball drawn is a multiple of 3 or 5 (a) $\frac{8}{15}$ (b) $\frac{2}{15}$ (c) $\frac{1}{2}$ (d) $\frac{7}{15}$ Ans : (d) [MTP Nov 22]
97	Ram is known to hit a target in 2 out of 3

	shots whereas Shyam is known to hit the same target in 5 out of 11 shots. What is the probability that the target would be hit if they both try? (a) $\frac{9}{11}$ (b) $\frac{6}{11}$ (c) $\frac{10}{33}$ (d) $\frac{3}{11}$ Ans : (a) [MTP Nov 22, May 24]
98	The probability that a leap year has 53 Wednesday is: (a) $\frac{2}{7}$ (b) $\frac{3}{5}$ (c) $\frac{1}{7}$ (d) $\frac{2}{3}$ Ans : (a) [MTP Nov 22]
99	When 2 dice are thrown simultaneously then the probability of getting at least one 5 is: $\frac{11}{36}$ $\frac{5}{36}$ $\frac{8}{36}$ $\frac{1}{7}$ Ans : (a) [MTP Nov 22]
100	If a coin is tossed 5 times then the probability of getting Tail and Head occurs alternatively is: (a) $\frac{1}{8}$ (b) $\frac{1}{16}$ (c) $\frac{1}{32}$ (d) $\frac{1}{64}$ Ans : (b) [MTP Nov 22]
101	Two events A and B are such that they do not occur simultaneously then they are called _____ events. (a) Mutually exhaustive (b) Mutually Exclusive (c) Mutually Independent (d) Equally Likely Ans : (b) [MTP Nov 22, May 24]
102	One card is drawn from a pack of 52, what is the probability that is a king or queen? (a) $\frac{11}{13}$ (b) $\frac{2}{13}$ (c) $\frac{1}{13}$ (d) None of these Ans : (b)

	[MTP May 24, RTP Jan 25]
10 3	A letter is taken out at random from the word RANGE and another is taken out from the word PAGE. The probability that they are the same letters is : (a) $1/20$ (b) $3/20$ (c) $3/5$ (d) $3/4$ Ans : (b) [MTP May 24]
10 4	In a box carrying one dozen of oranges, one third has become bad. If 3 oranges are taken out from the box at random, what is the probability that at least one orange out of the three oranges picked up is good? (a) $54/55$ (b) $1/55$ (c) $45/50$ (d) None of these Ans : (a) [MTP May 24]
10 5	If $P(A) = 1/2$, $P(B) = 1/3$ and $P(A \cap B) = 1/4$, then the value of $P(\bar{A} \cap \bar{B})$ is $5/12$ $7/12$ $1/2$ None of these Ans: (a) [MTP May 24]
10 6	A box contains 7 red, 6 white and 4 blue balls. How many selections of three balls can be

	made so that none is red? a. 90 b. 120 c. 48 d. None of these Ans : (b) [MTP May 24]
10 7	There were 200 employees in an office in which 150 were married. Total male employees were 160 out of which 120 were married. What was the number of female unmarried employees. (a) 30 (b) 10 (c) 40 (d) 50 Ans : B [MTP Dec 23]

Chapter 16: Theoretical Distributions

SET A

1.	A theoretical probability distribution. (a) does not exist. (b) exists in theory. (c) exists in real life. (d) both (b) and (c). Ans : (d)
2.	Probability distribution may be (a) discrete. (b) continuous. (c) infinite. (d) (a) or (b). Ans : (d)
3.	An important discrete probability distribution is (a) Poisson distribution. (b) Normal distribution. (c) Cauchy distribution. (d) Log normal distribution. Ans : (a)
4.	An important continuous probability distribution (a) Binomial distribution. (b) Poisson distribution. (c) Geometric distribution. (d) Normal distribution. Ans : (d)
5.	Parameter is a characteristic of (a) population. (b) sample. (c) probability distribution. (d) both (a) and (b). Ans : (a)
6.	An example of a parameter is (a) sample mean. (b) population mean. (c) binomial distribution. (d) sample size. Ans : (b)
7.	A trial is an attempt to (a) make something possible. (b) make something impossible. (c) prosecute an offender in a court of law.

	(d) produce an outcome which is neither certain nor impossible Ans : (d)
8.	The important characteristic(s) of Bernoulli trials (a) each trial is associated with just two possible outcomes. (b) trials are independent. (c) trials are infinite (d) both (a) and (b). Ans : (d)
9.	The probability mass function of binomial distribution is given by (a) $f(x) = p^x q^{n-x}$. (b) $f(x) = {}^n C_x p^x q^{n-x}$ (c) $f(x) = {}^n C_x q^x p^{n-x}$ (d) $f(x) = {}^n C_x p^{n-x} q^x$ Ans : (b)
10.	If x is a binomial variable with parameters n and p , then x can assume (a) any value between 0 and n . (b) any value between 0 and n , both inclusive (c) any whole number between 0 and n , both inclusive (d) any number between 0 and infinity Ans : (c)
11.	A binomial distribution is (a) never symmetrical (b) never positively skewed (c) never negatively skewed. (d) symmetrical when $p = 0.5$ Ans : (d) [SM, MTP1 and 2, May 19]
12.	The mean of a binomial distribution with parameter n and p is (a) $n(1-p)$ (b) $np(1-p)$ (c) np (d) $\sqrt{np(1-p)}$ Ans : (c) [SM, MTP May 21, RTP Sep 24]

13.	The SD of a binomial distribution with parameter n and p is (a) $n(1-p)$ (b) $np(1-p)$ (c) np (d) $\sqrt{np(1-p)}$ Ans : (c) [MTP Nov 20]
14.	The variance of a binomial distribution with parameters n and p is (a) $np^2(1-p)$ (b) $\sqrt{np(1-p)}$ (c) $nq(1-q)$ (d) $n^2p^2(1-p)^2$ Ans : (c) [SM, MTP Nov 21]
15.	An example of a bi-parametric discrete probability distribution is (a) binomial distribution (b) poisson distribution (c) normal distribution (d) both (a) and (b). Ans : (a) [SM, MTP May 22, Nov 21]
16.	25. An example of bi-parametric continuous probability distribution. (a) Binomial (b) Poisson (c) Normal (d) (a) and (b) Ans : C [MTP Dec 24]
17.	For a binomial distribution, mean and mode (a) are never equal. (b) are always equal (c) are equal when $q = 0.50$. (d) do not always exist Ans : (c)
18.	The mean of binomial distribution is (a) always more than its variance. (b) always equal to its variance (c) always less than its variance (d) always equal to its standard deviation Ans : (a) [SM, MTP Nov 18]
19.	For a binomial distribution, there may be (a) one mode (b) two modes. (c) multi modes (d) (a) or (b)

	Ans : (c)
20.	The maximum value of the variance of a binomial distribution with parameters n and p is (a) $n/2$. (b) $n/4$. (c) $np(1-p)$. (d) $2n$. Ans : (b) [SM, MTP1 and 2 May 19]
21.	The method usually applied for fitting a binomial distribution is known as (a) method of least square (b) method of moments (c) method of probability distribution (d) method of deviations Ans : (b)
22.	Which one is not a condition of Poisson model? (a) the probability of having success in a small time interval is constant (b) the probability of having success more than one in a small time interval is very small (c) the probability of having success in a small interval is independent of time and also of earlier success (d) the probability of having success in a small time interval $(t, t + dt)$ is kt for a positive constant k Ans : (a) [SM, MTP May 18, June 24]
23.	Which one is uniparametric distribution? (a) Binomial (b) Poisson. (c) Normal (d) Hyper geometric Ans : (b) [SM, MTP May 19, Dec 23]
24.	For a Poisson distribution (a) mean and standard deviation are equal (b) mean and variance are equal (c) standard deviation and variance are equal (d) both (a) and (b). Ans : (b) [SM, MTP May 21, Nov 21, May 22, May 23]
25.	Poisson distribution may be (a) unimodal. (b) bimodal

	(c) Multi-modal. (d) (a) or (b) Ans : (d)
26.	Poisson distribution is (a) always symmetric. (b) always positively skewed (c) always negatively skewed (d) symmetric only when $m = 2$. Ans : (b)
27.	A binomial distribution with parameters n and p can be approximated by a Poisson distribution with parameter $m = np$ is (a) $n \rightarrow \infty$ (b) $p \rightarrow 0$ (c) $n \rightarrow \infty$ and $p \rightarrow 0$ (d) $n \rightarrow \infty$ and $p \rightarrow 0$ so that np remains finite.. Ans : (d)
28.	For Poisson fitting to an observed frequency distribution, (a) we equate the Poisson parameter to the mean of the frequency distribution (b) we equate the Poisson parameter to the median of the distribution (c) we equate the Poisson parameter to the mode of the distribution (d) none of these Ans : (a) [SM, MTP May 19]
29.	The most important continuous probability distribution is known as (a) Binomial distribution (b) Normal distribution. (c) Chi-square distribution (d) Sampling distribution Ans : (b)
30.	The probability density function of a normal variable x is given by (a) $f(x) = \frac{1}{\sigma\sqrt{2\pi}} \cdot e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$ for $-\infty < x < \infty$. (b) $f(x) = \frac{1}{\sigma\sqrt{2\pi}} \cdot e^{-\frac{(x-\mu)^2}{2\sigma^2}}$ for $0 < x < \infty$. (c) $f(x) = \frac{1}{\sqrt{2\pi}\sigma} \cdot e^{-\frac{(x-\mu)^2}{2\sigma^2}}$ for $-\infty < x < \infty$. (d) none of these Ans : (a)
31.	The total area of the normal curve is (a) one (b) 50 per cent (c) 0.50 (d) any value between 0 and 1 Ans : (a)

	[SM, MTP May 19, June 24, Nov 20, May 21]
32.	The normal curve is (a) Bell-shaped (b) U- shaped (c) J-shaped (d) Inverted J-shaped Ans : (a)
33.	The normal curve is (a) positively skewed (b) negatively skewed. (c) symmetrical. (d) all these Ans : (c) [SM, MTP Nov 21]
34.	Area of the normal curve (a) between $-\infty$ to μ is 0.50. (b) between μ to ∞ is 0.50. (c) between $-\infty$ to ∞ is 0.50. (d) both (a) and (b). Ans : (d)
35.	The cumulative distribution function of a random variable X is given by (a) $F(x) = P(X \leq x)$ (b) $F(X) = P(X \leq x)$ (c) $F(x) = P(X \geq x)$ (d) $F(x) = P(X = x)$ Ans : (a)
36.	The mean and mode of a normal distribution (a) may be equal. (b) may be different (c) are always equal. (d) (a) or (b) Ans : (c) [SM, MTP Nov 20]
37.	The mean deviation about median of a standard normal variate is (a) 0.675σ (b) 0.675 (c) 0.80σ (d) 0.80 Ans : (d) [SM, MTP May 19, July 24]
38.	The quartile deviation of a normal distribution with mean 10 and SD 4 is (a) 0.675 (b) 67.5 (c) 2.70 (d) 3.20 Ans : (c)

	[SM, MTP Nov 23, July 24, Dec 23]
39.	For a standard normal distribution, the points of inflexion are given by (a) $\mu - \sigma$ and $\mu + \sigma$ (b) $-\sigma$ and σ (c) -1 and 1 (d) 0 and 1 Ans : (c)
40.	The symbol $f(a)$ indicates the area of the standard normal curve between (a) 0 to a (b) a to ∞ . (c) $-\infty$ to a (d) $-\infty$ to ∞ Ans : (c)
41.	The interval $(\mu - 3\sigma, \mu + 3\sigma)$ covers (a) 95% area of a normal distribution (b) 96% area of a normal distribution (c) 99% area of a normal distribution (d) all but 0.27% area of a normal distribution. Ans : (d) [SM, MTP may 19, April 24]
42.	Number of misprints per page of a thick book follows (a) Normal distribution

	(b) Poisson distribution (c) Binomial distribution (d) Standard normal distribution Ans : (b) [SM, MTP May 20, Jan 25]
43.	The results of ODI matches between India and Pakistan follows (a) Binomial distribution (b) Poisson distribution (c) Normal distribution (d) (b) or (c) Ans : (a)
44.	The wage of workers of a factory follow (a) Binomial distribution (b) Poisson distribution (c) Normal distribution (d) Chi-square distribution Ans : (c)
45.	If X and Y are two independent normal random variables, then the distribution of $(X+Y)$ is (a) normal (b) standard normal (c) T (d) chi-square Ans : (a)

SET B

1.	What is the standard deviation of the number of recoveries among 48 patients when the probability of recovering is 0.75? (a) 36 (b) 81 (c) 9 (d) 3 Ans : (d) [SM, MTP May 21]
2.	X is a binomial variable with $n = 20$. What is the mean of X if it is known that x is symmetric? (a) 5 (b) 10 (c) 2 (d) 8 Ans : (b)

3.	If $X \sim B(n, p)$, what would be the greatest value of the variance of x when $n = 16$? (a) 2 (b) 4 (c) 8 (d) $\sqrt{5}$ Ans : (b)
4.	If x is a binomial variate with parameter 15 and $1/3$, what is the value of mode of the distribution? (a) 5 and 6 (b) 5 (c) 5.50 (d) 6 Ans : (b) [SM, MTP May 21, Nov 23]

5.	What is the number of trials of a binomial distribution having mean and SD as 3 and 1.5 respectively? (a) 2 (b) 4 (c) 8 (d) 12 Ans : (d)
6.	What is the probability of getting 3 heads if 6 unbiased coins are tossed simultaneously? (a) 0.50 (b) 0.25 (c) 0.3125 (d) 0.6875 Ans : (c)
7.	If the overall percentage of success in an exam is 60, what is the probability that out of a group of 4 students, at least one has passed? (a) 0.6525 (b) 0.9744 (c) 0.8704 (d) 0.0256 Ans : (b)
8.	What is the probability of making 3 correct guesses in 5 True - False answer type questions? (a) 0.3125 (b) 0.5676 (c) 0.6875 (d) 0.4325 Ans : (a)
9.	If the standard deviation of a Poisson variate X is 2, what is $P(1.5 < X < 2.9)$? (a) 0.231 (b) 0.158 (c) 0.15 (d) 0.144 Ans : (d)
10.	If the mean of a Poisson variable X is 1, what is $P(X = \text{takes the value at least 1})$? (a) 0.456 (b) 0.821 (c) 0.632 (d) 0.254 Ans : (c)
11.	If $X \sim P(m)$ and its coefficient of variation is 50, what is the probability that X would assume only non-zero values? (a) 0.018 (b) 0.982

	(c) 0.989 (d) 0.976 Ans : (b)
12.	If 1.5 per cent of items produced by a manufacturing units are known to be defective, what is the probability that a sample of 200 items would contain no defective item? (a) 0.05 (b) 0.15 (c) 0.20 (d) 0.22 Ans : (a)
13.	For a Poisson variate X, $P(X = 1) = P(X = 2)$. What is the mean of X? (a) 1.00 (b) 1.50 (c) 2.00 (d) 2.50 Ans : (c) [SM, MTP Nov 21, Nov 22]
14.	If $P(X=2) = P(X=3)$ for a Poisson Variate X, then $E(x)$ is (a) 2 (b) 3 (c) 1 (d) None of these Ans : (b) [MTP Nov 20]
15.	If 1 per cent of an airline's flights suffer a minor equipment failure in an aircraft, what is the probability that there will be exactly two such failures in the next 100 such flights? (a) 0.50 (b) 0.184 (c) 0.265 (d) 0.256 Ans : (b)
16.	If for a Poisson variable X, $f(2) = 3 f(4)$, what is the variance of X? (a) 2 (b) 4 (c) $\sqrt{2}$ (d) 3 Ans : (a) [SM, MTP May 20, Jan 25, RTP Sep 24]
17.	What is the coefficient of variation of x, characterised by the following probability density function: $f(x) = \frac{1}{4\sqrt{2\pi}} e^{-(x-10)^2/32} \text{ for } -\alpha < x < \alpha$

	(a) 50 (b) 60 (c) 40 (d) 30 Ans : (c)
18.	What is the first quartile of X having the following probability density function? $f(x) = \frac{1}{\sqrt{72\pi}} e^{-(x-10)^2/72} \text{ for } -\infty < x < \infty$ (a) 4 (b) 5 (c) 5.95 (d) 6.75 Ans : (c) [SM, MTP Nov 21]
19.	If the two quartiles of N (μ, σ^2) are 14.6 and 25.4 respectively, what is the standard deviation of the distribution? (a) 9 (b) 6 (c) 10 (d) 8 Ans : (d) [SM, MTP Nov 23]
20.	If the mean deviation of a normal variable is 16, what is its quartile deviation? (a) 10.00 (b) 13.50 (c) 15.00 (d) 12.05 Ans : (b) [SM, MTP May 19, Nov 21]
21.	If the points of inflexion of a normal curve are 40 and 60 respectively, then its mean deviation is (a) 40 (b) 45 (c) 50

	(d) 60 Ans : (a) [SM, MTP1 and 2, May 19, May 20, Nov 21, Jan 25]
22.	If the quartile deviation of a normal curve is 4.05, then its mean deviation is (a) 5.26 (b) 6.24 (c) 4.24 (d) 4.80 Ans : (d) [SM, MTP June 24, July 24]
23.	If the 1st quartile and mean deviation about median of a normal distribution are 13.25 and 8 respectively, then the mode of the distribution is (a) 20 (b) 10 (c) 15 (d) 12 Ans : (a)
24.	If the area of standard normal curve between $z = 0$ to $z = 1$ is 0.3413, then the value of $f(1)$ is (a) 0.5000 (b) 0.8413 (c) -0.5000 (d) 1 Ans : (b)
25.	If X and Y are 2 independent normal variables with mean as 10 and 12 and SD as 3 and 4, then (X+Y) is normally distributed with (a) mean = 22 and SD = 7 (b) mean = 22 and SD = 25 (c) mean = 22 and SD = 5 (d) mean = 22 and SD = 49 Ans : (c)

SET C

1.	If it is known that the probability of a missile hitting a target is $1/8$, what is the probability that out of 10 missiles fired, at least 2 will hit the target? (a) 0.4258 (b) 0.3968

	(c) 0.5238 (d) 0.3611 Ans : (d)
2.	X is a binomial variable such that $2 P(X = 2) = P(X = 3)$ and mean of X is known to be $10/3$.

	What would be the probability that X assumes at most the value 2? (a) 16/81 (b) 17/81 (c) 47/243 (d) 46/243 Ans : (b)												
3.	Assuming that one-third of the population is tea drinkers and each of 1000 enumerators takes a sample of 8 individuals to find out whether they are tea drinkers or not, how many enumerators are expected to report that five or more people are tea drinkers? (a) 100 (b) 95 (c) 88 (d) 90 Ans : (C)												
4.	If a random variable X follows binomial distribution with mean as 5 and satisfying the condition $10 P(X = 0) = P(X = 1)$, what is the value of $P(x \leq 1/x > 0)$? (a) 0.67 (b) 0.56 (c) 0.99 (d) 0.82 Ans : (c)												
5.	Out of 128 families with 4 children each, how many are expected to have at least one boy and one girl? (a) 100 (b) 105 (c) 108 (d) 112 Ans : (d)												
6.	In 10 independent rollings of a biased die, the probability that an even number will appear 5 times is twice the probability that an even number will appear 4 times. What is the probability that an even number will appear twice when the die is rolled 8 times? (a) 0.0304 (b) 0.1243 (c) 0.2315 (d) 0.1926 Ans : (a)												
7.	If a binomial distribution is fitted to the following data: <table><tr><td>x:</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>f:</td><td>16</td><td>25</td><td>32</td><td>17</td><td>10</td></tr></table>	x:	0	1	2	3	4	f:	16	25	32	17	10
x:	0	1	2	3	4								
f:	16	25	32	17	10								

	then the sum of the expected frequencies for $x = 2, 3$ and 4 would be (a) 58 (b) 59 (c) 60 (d) 61 Ans : (d)
8.	If X follows normal distribution with $\mu = 50$ and $\sigma = 10$, what is the value of $P(x \leq 60 / x > 50)$? (a) 0.8413 (b) 0.6828 (c) 0.1587 (d) 0.7256 Ans : (b) [SM, MTP Nov 21]
9.	X is a Poisson variate satisfying the following condition $9 P(X = 4) + 90 P(X = 6) = P(X = 2)$. What is the value of $P(X \leq 1)$? (a) 0.5655 (b) 0.6559 (c) 0.7358 (d) 0.8201 Ans : (c)
10.	A random variable x follows Poisson distribution and its coefficient of variation is 50. What is the value of $P(x > 1 / x > 0)$? (a) 0.1876 (b) 0.2341 (c) 0.9254 (d) 0.8756 Ans : (c)
11.	A renowned hospital usually admits 200 patients every day. One per cent patients, on an average, require special room facilities. On one particular morning, it was found that only one special room is available. What is the probability that more than 3 patients would require special room facilities? (a) 0.1428 (b) 0.1732 (c) 0.2235 (d) 0.345 Ans : (a)
12.	A car hire firm has 2 cars which is hired out everyday. The number of demands per day for a car follows Poisson distribution with mean 1.20. What is the proportion of days on which some demand is refused? (Given $e^{1.20} = 3.32$) (a) 0.25 (b) 0.3012

	(c) 0.12 (d) 0.03 Ans : (d)														
13.	If a Poisson distribution is fitted to the following data: <table><tr><td>Mistake per page</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>No. of pages</td><td>76</td><td>74</td><td>29</td><td>17</td><td>3</td><td>1</td></tr></table> Then the sum of the expected frequencies for $x = 0, 1$ and 2 is (a) 150 (b) 184 (c) 165 (d) 148 Ans : (b)	Mistake per page	0	1	2	3	4	5	No. of pages	76	74	29	17	3	1
Mistake per page	0	1	2	3	4	5									
No. of pages	76	74	29	17	3	1									
14.	The number of accidents in a year attributed to taxi drivers in a locality follows Poisson distribution with an average 2. Out of 500 taxi drivers of that area, what is the number of drivers with at least 3 accidents in a year? (a) 162 (b) 180 (c) 201 (d) 190 Ans : (a)														
15.	In a sample of 800 students, the mean weight and standard deviation of weight are found to be 50 kg and 20 kg respectively. On the assumption of normality, what is the number of students weighing between 46 Kg and 62 Kg? Given area of the standard normal curve between $z = 0$ to $z = 0.20 = 0.0793$ and area between $z = 0$ to $z = 0.60 = 0.2257$. (a) 250 (b) 244 (c) 240 (d) 260 Ans : (b)														
16.	The salary of workers of a factory is known to follow normal distribution with an average salary of ` 10,000 and standard deviation of salary as ` 2,000. If 50 workers receive salary more than ` 14,000, then the total no. of workers in the factory is (a) 2,193														

	(b) 2,000 (c) 2,200 (d) 2,500 Ans : (a)
17.	For a normal distribution with mean as 500 and SD as 120, what is the value of k so that the interval $[500, k]$ covers 40.32 per cent area of the normal curve? Given $\Phi(1.30) = 0.9032$ (a) 740 (b) 750 (c) 656 (d) 800 Ans : (c) [SM, MTP Nov 21]
18.	The average weekly food expenditure of a group of families has a normal distribution with mean ₹ 1,800 and standard deviation ₹ 300. What is the probability that out of 5 families belonging to this group, at least one family has weekly food expenditure in excess of ₹ 2,100? Given $\Phi(1) = 0.84$. (a) 0.418 (b) 0.582 (c) 0.386 (d) 0.614 Ans : (b)
19.	If the weekly wages of 5000 workers in a factory follows normal distribution with mean and SD as ₹ 700 and ₹ 50 respectively, what is the expected number of workers with wages between ₹ 660 and ₹ 720 (a) 2,050 (b) 2,200 (c) 2,218 (d) 2,300 Ans : (c)
20.	50 per cent of a certain product have weight 60 kg or more whereas 10 per cent have weight 55 kg or less. On the assumption of normality, what is the variance of weight? Given $\Phi(1.28) = 0.90$ (a) 15.21 (b) 9.00 (c) 16.00 (d) 22.68 Ans : (a)

ADDITIONAL QUESTION BANK

1.	When a coin is tossed 10 times then we use (a) Normal Distribution (b) Poisson Distribution (c) Binomial Distribution (d) None Ans : (c)
2.	In Binomial Distribution 'n' means (a) Number of trials of the experiment (b) the probability of getting success (c) Number of success (d) none Ans : (a)
3.	Binomial probability Distribution is a (a) Continuous (b) discrete (c) both (d) none Ans : (b)
4.	When there are a fixed number of repeated trial of any experiments under identical conditions for which only one of two mutually exclusive outcomes, success or failure can result in each trial then, we use (a) Normal Distribution (b) Binomial Distribution (c) Poisson Distribution (d) None Ans : (b)
5.	In Binomial Distribution 'p' denotes Probability of (a) Success (b) Failure (c) Both (d) None Ans : (a)
6.	When $p = 0.5$, the binomial distribution is (a) asymmetrical (b) symmetrical (c) Both (d) None Ans : (b) [SM, MTP May 18, June 24, July 24]
7.	When 'p' is larger than 0.5, the binomial distribution is (a) asymmetrical (b) symmetrical (c) Both (d) None Ans : (a)

[SM, MTP Nov 23]	
8.	Mean of Binomial distribution is (a) npq (b) np (c) both (d) none Ans : (b)
9.	Variance of Binomial distribution is (a) npq (b) np (c) both (d) none Ans : (a)
10.	When $p = 0.1$ the binomial distribution is skewed to the (a) Left (b) Right (c) Both (d) None Ans : (b)
11.	If in Binomial distribution $np = 9$ and $npq = 2.25$ then q is equal to (a) 0.25 (b) 0.75 (c) 1 (d) None Ans : (a)
12.	In Binomial Distribution (a) mean is greater than variance (b) mean is less than variance (c) mean is equal to variance (d) none Ans : (a)
13.	Standard deviation of binomial distribution is (a) $(npq)^2$ (b) $\sqrt{npq}$ (c) $(np)^2$ (d) $\sqrt{np}$ Ans : (b) [SM, MTP June 23, Dec 23]
14.	_____ distribution is a limiting case of Binomial distribution (a) Normal (b) Poisson (c) Both (d) None Ans : (b)

15.	When the number of trials is large and probability of success is small then we use the distribution (a) Normal (b) Poisson (c) Binomial (d) none Ans : (b)
16.	In Poisson Distribution, probability of success is very close to (a) 1 (b) -1 (c) 0 (d) none Ans : (c)
17.	In Poisson Distribution np is (a) finite (b) infinite (c) 0 (d) none Ans : (a)
18.	In _____ distribution, mean = variance (a) Normal (b) Binomial (c) Poisson (d) none Ans : (c) [SM, MTP May 18, June 24, May 22]
19.	In Poisson distribution mean is equal to (a) (λ) (b) np (c) square root mp (d) square root mpq Ans : (a)
20.	In Binomial distribution standard deviation is equal to (a) $\sqrt{np}$ (b) $(np)^2$ (c) $\sqrt{npq}$ (d) $(npq)^2$ Ans : (c)
21.	For _____ continuous _____ events _____ distribution is used. (a) Normal (b) Poisson (c) Binomial (d) none Ans : (a)
22.	Probability density function is associated with

	(a) discrete random variable (b) continuous random variables (c) both (d) none Ans : (b)
23.	Probability density function is always (a) greater than 0 (b) greater than equal to 0 (c) less than 0 (d) less than equal to 0 Ans : (b)
24.	For continuous random variables probability of the entire space is (a) 0 (b) -1 (c) 1 (d) none Ans : (c)
25.	For discrete random variables the probability of the entire space is (a) 0 (b) 1 (c) -1 (d) none Ans : (b)
26.	Binomial distribution is symmetrical if (a) $p > q$ (b) $p < q$ (c) $p = q$ (d) none Ans : (c)
27.	The Poisson distribution tends to be symmetrical if the mean value is (a) high (b) low (c) zero (d) none Ans : (a)
28.	The curve of _____ distribution has single peak (a) Poisson (b) Binomial (c) Normal (d) none Ans : (c)
29.	The curve of _____ distribution is unimodal and bell shaped with the highest point over the mean (a) Poisson (b) Normal

	(c) Binomial (d) none Ans : (b)
30.	Because of the symmetry of Normal distribution the median and the mode have the _____ value as that of the mean (a) greater (b) smaller (c) same (d) none Ans : (c)
31.	For a Normal distribution, the total area under the normal curve is (a) 0 (b) 1 (c) 2 (d) -1 Ans : (b) [SM, MTP June 24]
32.	In Normal distribution the probability has the maximum value at the (a) Mode (b) Mean (c) Median (d) All Ans : (b)
33.	In Normal distribution the probability decreases gradually on either side of the mean but never touches the axis. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
34.	Whatever may be the parameter of _____ distribution, it has same shape. (a) Normal (b) Binomial (c) Poisson (d) none Ans : (a)
35.	In Standard Normal distribution (a) mean=1, S.D=0 (b) mean=1, S.D=1 (c) mean = 0, S.D = 1 (d) mean=0, S.D=0 Ans : (c)
36.	The Number of methods for fitting the normal curve is (a) 1

	(b) 2 (c) 3 (d) 4 Ans : (b)
37.	_____ distribution is symmetrical around $t = 0$ (a) Normal (b) Poisson (c) Binomial (d) t Ans : (d)
38.	As the degree of freedom increases, the _____ distribution approaches the Standard Normal distribution (a) t (b) Binomial (c) Poisson (d) Normal Ans : (a)
39.	_____ distribution is asymptotic to the horizontal axis. (a) Binomial (b) Normal (c) Poisson (d) t Ans : (d)
40.	_____ distribution has a greater spread than Normal distribution curve (a) t (b) Binomial (c) Poisson (d) none Ans : (a)
41.	In Binomial Distribution if n is infinitely large, the probability p of occurrence of event' is close to _____ and q is close to _____ (a) 0, 1 (b) 1, 0 (c) 1, 1 (d) none Ans : (a)
42.	Poisson distribution approaches a Normal distribution as n (a) increase infinitely (b) decrease (c) increases moderately (d) none Ans : (a)

43.	If neither p nor q is very small but n sufficiently large, the Binomial distribution is very closely approximated by _____ distribution (a) Poisson (b) Normal (c) t (d) none Ans : (b)								
44.	For discrete random variable x, Expected value of x (i.e $E(x)$) is defined as the sum of products of the different values and the corresponding probabilities. (a) True (b) False (c) both (d) none Ans : (a)								
45.	For a probability distribution, _____ is the expected value of x. (a) median (b) mode (c) mean (d) none Ans : (c)								
46.	_____ is the expected value of $(x - m)^2$, where m is the mean. (a) median (b) variance (c) standard deviation (d) mode Ans : (b)								
47.	The probability distribution of x is given below: <table border="1"><tr><td>Value of x:</td><td>1</td><td>0</td><td>Total</td></tr><tr><td>Probability</td><td>p</td><td>$1 - p$</td><td>1</td></tr></table> Mean is equal to (a) p (b) $1-p$ (c) 0 (d) 1 Ans : (a)	Value of x :	1	0	Total	Probability	p	$1 - p$	1
Value of x :	1	0	Total						
Probability	p	$1 - p$	1						
48.	For n independent trials in Binomial distribution the sum of the powers of p and q is always n, whatever be the no. of success. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)								

49.	In Binomial distribution parameters are (a) n and q (b) n and p (c) p and q (d) none Ans : (b)
50.	In Binomial distribution if $n = 4$ and $p = 1/3$ then the value of variance is (a) $8/3$ (b) $8/9$ (c) $4/3$ (d) none Ans : (b)
51.	In Binomial distribution if mean = 20, S.D.= 4 then q is equal to (a) $2/5$ (b) $3/8$ (c) $1/5$ (d) $4/5$ Ans : (d)
52.	If in a Binomial distribution mean = 20, S.D.= 4 then p is equal to (a) $2/5$ (b) $3/5$ (c) $1/5$ (d) $4/5$ Ans : (c)
53.	If is a Binomial distribution mean = 20, S.D.= 4 then n is equal to (a) 80 (b) 100 (c) 90 (d) none Ans : (b)
54.	Poisson distribution is a _____ probability distribution. (a) discrete (b) continuous (c) both (d) none Ans : (a)
55.	Number of radio-active atoms decaying in a given interval of time is an example of (a) Binomial distribution (b) Normal distribution (c) Poisson distribution (d) None Ans : (c)
56.	_____ distribution is sometimes known as the "distribution of rare events".

	(a) Poisson (b) Normal (c) Binomial (d) none Ans : (a)
57.	The probability that x assumes a specified value in continuous probability distribution is (a) 1 (b) 0 (c) -1 (d) none Ans : (b)
58.	In Normal distribution mean, median and mode are (a) equal (b) not equal (c) zero (d) none Ans : (a)
59.	In Normal distribution the quartiles are equidistant from (a) median (b) mode (c) mean (d) none Ans : (c)
60.	In Normal distribution as the distance from the _____ increases, the curve comes closer and closer to the horizontal axis. (a) median (b) mean (c) mode (d) none Ans : (b)
61.	The probability density function of a continuous random variable is defined as follows : $f(x) = c$ when $-1 \leq x \leq 1 = 0$, otherwise the value of c is (a) 1 (b) -1 (c) $1/2$ (d) 0 Ans : (c)
62.	A continuous random variable x has the probability density $f(x) = \frac{1}{2} - ax$, $0 \leq x \leq 4$ When 'a' is a constant. The value of 'a' is (a) $7/8$ (b) $1/8$ (c) $3/16$ (d) none

	Ans : (b)
63.	An unbiased die is tossed 500 times. The mean of the number of 'Sixes' in these 500 tosses is (a) $50/6$ (b) $500/6$ (c) $5/6$ (d) None Ans : (b)
64.	An unbiased die is tossed 500 times. The Standard deviation of the number of 'sixes' in these 500 tossed is (a) $50/6$ (b) $500/6$ (c) $5/6$ (d) None Ans : (A)
65.	A random variable x follows Binomial distribution with mean 2 and variance 1.2. then the value of n is (a) 8 (b) 2 (c) 5 (d) None Ans : (c) [SM, MTP Nov 23, July 24]
66.	A random variable x follows Binomial distribution with mean 2 and variance 1.6 then the value of p is (a) $1/5$ (b) $4/5$ (c) $3/5$ (d) None Ans : (a)
67.	"The mean of a Binomial distribution is 5 and standard deviation is 3". (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
68.	The expected value of a constant k is the constant (a) k (b) $k-1$ (c) $k+1$ (d) none Ans : (a)
69.	The probability distribution whose frequency function $f(x) = 1/n$ ($x = x_1, x_2, \dots, x_n$) is known as

	(a) Binomial distribution (b) Poisson distribution (c) Uniform distribution (d) Normal distribution Ans : (c)
70.	Theoretical distribution is a (a) Random distribution (b) Standard distribution (c) Probability distribution (d) None Ans : (c)
71.	Probability function is known as (a) frequency function (b) continuous function (c) discrete function (d) none Ans : (a)
72.	The number of points obtained in a single throw of an unbiased die follows : (a) Binomial distribution (b) Poisson distribution (c) Uniform distribution (d) None Ans : (c)
73.	The Number of points in a single throw of an unbiased die has frequency function (a) $f(x)=1/4$ (b) $f(x)= 1/5$ (c) $f(x) = 1/6$ (d) none Ans : (c)
74.	In uniform distribution random variable x assumes n values with (a) equal probability (b) unequal probability (c) zero (d) none Ans : (a)
75.	In a discrete random variable x follows uniform distribution and assumes only the values 8 , 9, 11, 15, 18, 20. Then $P(x = 9)$ is (a) $2/6$ (b) $1/7$ (c) $1/5$ (d) $1/6$ Ans : (d)
76.	"In a discrete random variable x follows uniform distribution and assumes only the values 8, 9, 11, 15, 18, 20. Then $P(x = 12)$ is"

	(a) $1/6$ (b) 0 (c) $1/7$ (d) None Ans : (b)
77.	In a discrete random variable x follows uniform distribution and assumes only the values 8, 9, 11, 15, 18, 20. Then $P(x < 15)$ is (a) $1/2$ (b) $2/3$ (c) 1 (d) None Ans : (a)
78.	"In a discrete random variable x follows uniform distribution and assumes only the values 8, 9, 11, 15, 18, 20. Then $P(x < 15)$ is (a) $2/3$ (b) $1/3$ (c) 1 (d) None Ans : (a)
79.	In a discrete random variable x follows uniform distribution and assumes only the values 8, 9, 11, 15, 18, 20. Then $P(x > 15)$ is (a) $2/3$ (b) $1/3$ (c) 1 (d) None Ans : (b)
80.	In a discrete random variable x follows uniform distribution and assumes only the values 8, 9, 11, 15, 18, 20. Then $P(x - 14 < 5)$ is (a) $1/3$ (b) $2/3$ (c) $1/2$ (d) 1 Ans : (c)
81.	When $f(x)= 1/n$ then mean is (a) $(n-1)/2$ (b) $(n+1)/2$ (c) $n/2$ (d) none Ans : (b)
82.	In continuous probability distribution $P(x < t)$ means

	(a) Area under the probability curve to the left of the vertical line at t (b) Area under the probability curve to the right of the vertical line at t. (c) both (d) none Ans : (a)
83.	In continuous probability distribution $F(x)$ is called. (a) frequency distribution function (b) cumulative distribution function (c) probability density function (d) none Ans : (b)
84.	"The probability density function of a continuous random variable is $y = k(x-1)$, ($1 \leq x \leq 2$) then the value of the constant k is (a) -1 (b) 1 (c) 2 (d) 0 Ans : (c)
85.	In a normal distribution skewness is ____ (a) 0 (b) >3 (c) <3 (d) <1 Ans : (a) [MTP May 18, Nov 18, June 24, June 23(Similar)]
86.	If mean and standard deviation of a binomial distribution is 10 and 4 respectively; q will be ____ (a) 0.4 (b) 0.44 (c) 40 (d) 0.16 Ans : (a) [MTP May 18, June 24]
87.	If mean and standard deviation of a binomial distribution is 10 and 2 respectively; q will be ____ (a) 1 (b) 0.8 (c) 0.6 (d) 0.4 Ans : (d)

	[MTP2 June 24]
88.	The points of inflexion of the normal curve $f(t) = \frac{1}{4\sqrt{2\pi}} e^{-\frac{(t-10)^2}{32}}$ are (a) 6, 14 (b) 5, 15 (c) 4, 16 (d) none of these Ans : (a) [MTP May 18, Nov 18, June 24, MTP 2 June 24]
89.	The mean of Binomial Distribution is 4 and the Standard Deviation $\sqrt{3}$ what is the value of P. (a) $\frac{1}{3}$ (b) $\frac{1}{4}$ (c) $\frac{1}{5}$ (d) $\frac{3}{4}$ Ans : (b) [MTP May 18]
90.	If p is increased for a fixed n; the Binomial distribution shifts to the (a) Right (b) left (c) Above (d) Below Ans : (a) [MTP Nov 18]
91.	In Binomial Distribution the trials are statistics (a) dependent (b) independent (c) either independent or dependent (d) none of these Ans : (b) [MTP Nov 18]
92.	If Poisson distribution is such that $P(X = 2) = P(X = 3)$ then the Standard Deviation of the distribution is (a) $\sqrt{3}$ (b) 3 (c) 6 (d) 9 Ans : A [MTP June 23]
93.	The mean of Binomial distribution is 20 and Standard deviation is 4 then; (a) $n = 100, p = 1/5, q = 4/5$ (b) $n = 50, p = 2/5, q = 2/5$ (c) $n = 100, p = 2/5, q = 4/5$ (d) $n = 100, p = 1/5, q = 3/5$

	Ans : A [MTP Dec 24]
94.	In a Poisson distribution if $P(x = 4) = P(x = 5)$ then the parameter of Poisson distribution is : (a) 4/5 (b) 5/4 (c) 4 (d) 5 Ans : d [MTP Nov 22, Dec 24, May 24]
95.	Shape of Normal Distribution Curve: (a) Depends on its parameters (b) Does not depend on its parameters (c) Either (a) or (b) (d) Neither (a) nor (b) Ans : a [MTP Dec 24]
96.	A manufacturer, who produces medicine bottles, finds that 0.1 % of the bottles are defective. The bottles are packed in boxes containing 500 bottles. A drug manufacturer buys 100 boxes from the producer of bottles. Using Poisson distribution, find how many boxes will contains at least two defectives: [Given: $e^{-0.05} = 0.6065$] (a) 7 (b) 13 (c) 9 (d) 11 Ans : C [MTP Dec 24]
97.	X follows normal distribution with mean as 50 and variance as 100. What is $P(x \geq 60)$? [Given: $\Phi(1) = 0.8413$] (a) 0.20 (b) 0.40 (c) 0.16 (d) 0.30 Ans : (c) [MTP May 20, Jan 25]
98.	Find the probability of a success for the binomial distribution satisfying the following relation $4P(x = 4) = P(x = 2)$ and having the parameter n as six (a) 1/3 (b) 1/2 (c) 1/5 (d) 1/8

	Ans : (a) [MTP May 20]
99.	The Binomial Distribution for which mean = 16 and variance = 4.0 is (a) ${}^{21}C_x \times (0.25)^x \times (0.75)^{21-x}$ (b) ${}^{21}C_x \times (0.75)^x \times (0.25)^{21-x}$ (c) ${}^{21}C_x \times (0.25)^x \times (0.75)^{1-x}$ (d) ${}^{21}C_x \times (0.75)^x \times (0.25)^{1-x}$ Ans : (b) [MTP Nov 20]
100.	The Quartile Deviation of Normal Distribution with mean is 10 and variance is 16 is (a) 54.24 (b) 23.2 (c) 0.275 (d) 2.7 Ans : (d) [MTP May 21]
101.	Area covered normal curve by $\pm 3\sigma$ (a) 0.6828 (b) 0.9596 (c) 0.9973 (d) 0.9923 Ans : (d) [MTP May 21]
102.	In normal distribution what is the ratio of QD:MD:SD (a) 12:10:15 (b) 15:10:12 (c) 10:15:12 (d) 10:12:15 Ans : (d) [MTP May 21]
103.	Median of a distribution can be obtained from (a) Frequency polygon (b) Histogram (c) Less than type ogives (d) None of these Ans : (c) [MTP Nov 18]
104.	A binomial distribution has $n = 48$, $p = \frac{1}{4}$. Then SD (a) 12 (b) 3 (c) 6 (d) 8 Ans : (b) [MTP Nov 18]

105.	If x is a Poisson variate such that $P(x=2) = 9P(x=4) + 90P(x=6)$, find mean of x (a) $m = 2$ (b) $m = 1$ (c) $m = \pm 1$ (d) $m = -4$ Ans : (b) [MTP Nov 18]
106.	If x & y are two independent variables such that $x \sim B(n_1, P)$ and $y \sim B(n_2, p)$ then the parameter of $Z = x+y$ is (a) $(n_1+n_2), P$ (b) $(n_1-n_2), P$ (c) $(n_1+n_2), 2P$ (d) None of these Ans: (a) [MTP Nov 19]
107.	For the normal distribution density function $f(x) = k \cdot e^{\frac{x^2-6x+9}{8}}$, the mean and variance are (a) (2,3) (b) (3,2) (c) (4,3) (d) (3,4) Ans: (b) [MTP Nov 19]
108.	The mean deviation of normal distribution is 16. The Quartile Deviation is (a) 40/3 (b) 20/3 (c) 100/3 (d) 50/3 Ans: (a) [MTP Nov 19]
109.	The Quartile Deviation of the normal distribution $f(x) = \frac{1}{\sqrt{18\pi}} e^{\frac{-(x-10)^2}{18}}$ for $-\infty < x < \infty$ (a) 3 (b) 4/3 (c) 2 (d) 3/4 Ans: (c) [MTP Nov 19]
110.	If x and y are two independent normal random distributions with mean and SD's are (10, 5) and (15, 12) these mean and SD of $(x+y)$ is (a) (27, 15) (b) (10, 27)

	(c) (25,13) (d) (12,25) Ans: (c) [MTP Nov 19]
111.	What is the first quartile of X having the following probability density function? $f(x) = \frac{1}{\sqrt{72\pi}} e^{\frac{-(x-10)^2}{72}}$ for $-\infty < x < \infty$ (a) 4 (b) 5 (c) 5.95. (d) 6.75. Ans : (c) [MTP May 19]
112	For a random variable x ; the probability deviatory function is given by: $f(x) = \frac{e^{-(x-4)^2}}{\sqrt{\pi}}$ for $-\infty < x < \infty$ Find the mean and variance of its distribution (a) $\mu = 2; \sigma^2 = \frac{1}{4}$ (b) $\mu = 4; \sigma^2 = \frac{1}{2}$ (c) $\mu = \frac{1}{4}; \sigma^2 = \frac{1}{2}$ (d) None of them Ans : (b) [MTP Nov 18]
113.	If variance of random variable x is 23, then what's the variance of $2x+10$ (a) 56 (b) 33 (c) 46 (d) 92 Ans : (d) [MTP Nov 18]
114.	1. For a poisson variate X , $P(x=2) = 3P(x=4)$, then the standard deviation of X is (a) 2 (b) 4 (c) $\sqrt{2}$ (d) 3 Ans.(c) [MTP May 22]
115.	1. If avariante x has , mean>variance , then the distribution will be (a) Binomial Distribution (b) Poisson Distribution (c) Normal Distribution (d) T-Distribution Ans.(a) [MTP May 22]

116.	The mode of the binomial distribution for which the mean is 4 variance 3 is equal to ? (a) 4 (b) 4.5 (c) 4.25 (d) 4.1 Ans.(a) [MTP May 22]
117.	In a Poisson Distribution $P(x=0) = P(x=2)$. Find $E(x)$ (a) $\sqrt{2}$ (b) 2 (c) -1 (d) 0 Ans : 1 [MTP May 22]
118.	The variance of standard normal distribution is (a) 1 (b) 0 (c) σ^2 (d) 0 Ans : 1 [MTP May 22]
119.	In a Binomial distribution $n = 9$ and $P = 1/3$. What is the value of Variance. (a) 8 (b) 4 (c) 2 (d) 16 Ans : c [MTP May 22, Dec 23, May 21]
120.	If x be a poisson variates with parameter 1; then find $P(3 < X < 5)$. (Given $e^{-1} = 0.36783$) (a) 0.015326 (b) 0.15326 (c) 0.012326 (d) None of these Ans : 1 [MTP May 22]
121.	In a Binomial Distribution $B(n, p)$, $n = 4$, then $P(x=2) = 3 P(x=3)$ find P (a) $1/3$ (b) $2/3$ (c) $6/4$ (d) $4/3$ Ans : (a) [MTP Nov 21, RTP Jan 25]
122	What is the mean of X having the following density function $f(x) = \frac{1}{4\sqrt{2\pi}} e^{-\frac{(x-10)^2}{32}}$ for $-\infty <$

	$x < \infty$ (a) 10 (b) 4 (c) 40 (d) None of these Ans : (a) [MTP Nov 21, Nov 22x]
123	For a normal distribution $Q_1 = 54.32$ and $Q_3 = 78.86$, then the median of the distribution is (a) 12.17 (b) 39.43 (c) 66.69 (d) None of these Ans : (c) [MTP Nov 21, RTP Jan 25]
124	In a certain Poisson frequency distribution, the probability corresponding to two success is half the probability corresponding to three successes. The mean of the distribution is (a) 6 (b) 12 (c) 3 (d) 2.45 Ans : (a) [MTP Nov 21]
125	Number of defects in clothes a garments showroom will form a (a) Poisson distribution (b) Normal distribution (c) Binomial distribution (d) Cannot be determined Ans : (a) [MTP Nov 21]
126	Normal distribution is also known as (a) Gaussian distribution (b) Binomial distribution (c) Poisson distribution (d) None of these Answer(a) [MTP May 23]
127	For the Poisson distribution: (a) Events are independent of each other. (b) Average rate (events per time period) is constant (c) Two events cannot occur simultaneously. (d) All of the above Answer(d) [MTP May 23]

128	If standard deviation of a poisson distribution is 2 , then its Mode (a) 2 (b) 4 (c) 3 and 4 (d) 5 Ans : (c) [MTP April 24]
129	For binomial distribution $E(x) = 2$, $V(x) = 4/3$. Find the value of n. (a) 3 (b) 4 (c) 5 (d) 6 Ans : (d) [MTP April 24]
130	Which of the following is not a characteristic of a normal probability distribution? (a) Mean of the normally distributed population lies at the centre of its normal curve. (b) It is multi-modal (c) The mean, median and mode are equal (d) It is a symmetric curve. Ans : B [MTP Dec 23]
131	An approximate relation between quartile deviation (QD) and standard deviation (S.D.) of normal distribution is : (a) $5QD = 4 SD$ (b) $4 QD = 5 SD$ (c) $2 QD = SD$ (d) $3 QD = 2 SD$ Ans : D [MTP Dec 23]
132	For a normal distribution with mean 150 and SD is 45, Find Q1 and Q3 (a) 119.35 and 190.65 (b) 119.65 and 180 .35 (c) 180.35 and 119.65 (d) 123.45 and 183.65 Ans: (b) [MTP May 21]
133	The mean of Poisson distribution is 4. The probability of two-successes in (a) $8/e^4$ (b) $4/e^4$ (c) $16/e^4$ (d) $8/e^2$ Ans : (a)

	[MTP July 24]
134	Find the variance of binomial distribution with $n = 10$, $p = 0.3$ (a) 2.1 (b) 3 (c) 7 (d) None of these Ans : (a) [MTP May 24]
135	If the inflexion points of a Normal Distribution are 6 and 14. Find its Standard Deviation? (a) 4 (b) 6 (c) 10 (d) 12 Ans : A [MTP June 23, Dec 23]
136	The wages of workers of a factory follows (a) Binomial distribution (b) Poisson distribution (c) Normal distribution (d) Chi-square distribution Ans : C [MTP Dec 23]
137	For a 4×7 classification of bivariate data, the maximum number of conditional distributions is : (a) 11 (b) 28 (c) 35 (d) None Ans : (a) [MTP Nov 21]
138	For a continuous random variable following standard normal distribution, what is the value of standard deviation? (a) 1 (b) 0 (c) -1 (d) More than 1 Answer(a) [MTP June 23]
139	Which of the following is not a property of normal distribution? (a) There are two points of inflexion. (b) Mean, median and mode coincide for normal distribution (c) Skewness is zero (d) All the above

	Answer(d) [MTP June 23]
140	To find the distribution of number of airplanes crashing every hour in the world, which of the following distribution is appropriate to apply: (a) Normal distribution (b) Binomial distribution (c) Poisson distribution (d) Using any of the above will yield the same output Answer(c) [MTP June 23]
141	If 5% of the electric bulbs manufactured by a company are defective, use Poisson distribution to find the probability that in a sample of 100 bulbs, 5 bulbs will be defective. [Given : $e^{-5} = 0.007$] (a) 0.1823 (b) 0.1723 (c) 0.1623 (d) 0.1923 Ans : (a) [MTP Nov 22]
142	For a normal distribution, the first and third quartile are given to be 37 and 49, the mode of the distribution is. (a) 37 (b) 49 (c) 43 (d) 45 Ans : (c) [MTP Nov 22, RTP Jan 25]
143	According to the empirical rule, if the data form a "bell-shaped" distribution, then the maximum and minimum frequencies occur at _____ and _____ respectively. (a) Middle, left end (b) Middle, right end (c) End, middle (d) Middle, ends Ans : (d) [MTP July 24]
144	Area between -1.96 to +1.96 in a normal distribution is : (a) 95.45% (b) 95%

	(c) 96% (d) 99% Ans : (b) [MTP Nov 22]														
145	If mean and variance are 5 and 3 respectively then relation between p and q is : (a) $p > q$ (b) $p < q$ (c) $p = q$ (d) p is symmetric Ans : (b) [MTP Nov 22]														
146	Daily demand for calculators is having the following probability distribution: <table border="1"> <thead> <tr> <th>Demand</th><th>Probability</th></tr> </thead> <tbody> <tr><td>1</td><td>0.10</td></tr> <tr><td>2</td><td>0.15</td></tr> <tr><td>3</td><td>0.20</td></tr> <tr><td>4</td><td>0.25</td></tr> <tr><td>5</td><td>0.18</td></tr> <tr><td>6</td><td>0.12</td></tr> </tbody> </table> Determine the variance of the demand. (a) 2.54 (b) 2.93 (c) 2.22 (d) 2.19 Ans : (c) [MTP may 24]	Demand	Probability	1	0.10	2	0.15	3	0.20	4	0.25	5	0.18	6	0.12
Demand	Probability														
1	0.10														
2	0.15														
3	0.20														
4	0.25														
5	0.18														
6	0.12														
147	For a (m×n) classification of bivariate data, the maximum number of conditional distributions is (a) p (b) p+q (c) pq (d) p Ans : (c) [MTP May 24]														
148	If the width of each of ten classes in a frequency distribution is 2.5 and the lower class boundary is 5.1, then the upper class boundary of the highest class is a. 30.1 b. 31.1 c. 30 d. 27.6 Ans : (a) [MTP May 24]														

Chapter 17: Correlation And Regression

SET A

1.	Bivariate Data are the data collected for (a) Two variables irrespective of time (b) More than two variables (c) Two variables at the same point of time (d) Two variables at different points of time. Ans : (c) [SM, MTP Nov 20]
2.	For a bivariate frequency table having $(p + q)$ classification the total number of cells is (a) p (b) $p + q$ (c) q (d) pq Ans : (d) [SM, MTP Nov 18, Nov 21]
3.	Some of the cell frequencies in a bivariate frequency table may be (a) Negative (b) Zero (c) a or b (d) Non of these Ans : (b)
4.	For a $p \times q$ bivariate frequency table, the maximum number of marginal distributions is (a) p (b) $p + q$ (c) 1 (d) 2 Ans : (d) [SM, MTP Nov 21]
5.	For a $p \times q$ classification of bivariate data, the maximum number of conditional distributions is (a) p (b) $p + q$ (c) pq (d) p or q Ans : (b) [SM, MTP Nov 21]
6.	Correlation analysis aims at (a) Predicting one variable for a

	given value of the other variable (b) Establishing relation between two variables (c) Measuring the extent of relation between two variables (d) Both (b) and (c). Ans : (d) [SM, MTP May 19]
7.	Regression analysis is concerned with (a) Establishing a mathematical relationship between two variables (b) Measuring the extent of association between two variables (c) Predicting the value of the dependent variable for a given value of the independent variable (d) Both (a) and (c). Ans : (d)
8.	What is spurious correlation? (a) It is a bad relation between two variables. (b) It is very low correlation between two variables. (c) It is the correlation between two variables having no causal relation. (d) It is a negative correlation. Ans : (c) [SM, MTP Jan 25, May 19, May 20, Nov 18]
9.	Scatter diagram is considered for measuring (a) Linear relationship between two variables (b) Curvilinear relationship between two variables (c) Neither (a) nor (b) (d) Both (a) and (b). Ans : (d)

10.	If the plotted points in a scatter diagram lie from upper left to lower right, then the correlation is (a) Positive (b) Zero (c) Negative (d) None of these. Ans : (c) [SM, MTP May 22]
11.	If the plotted points in a scatter diagram are evenly distributed, then the correlation is (a) Zero (b) Negative (c) Positive (d) (a) or (b). Ans : (a)
12.	If all the plotted points in a scatter diagram lie on a single line, then the correlation is (a) Perfect positive (b) Perfect negative (c) Both (a) and (b) (d) Either (a) or (b). Ans : (d)
13.	The correlation between shoe-size and intelligence is (a) Zero (b) Positive (c) Negative (d) None of these. Ans : (a)
14.	The correlation between the speed of an automobile and the distance travelled by it after applying the brakes is (a) Negative (b) Zero (c) Positive (d) None of these. Ans : (a)
15.	Scatter diagram helps us to (a) Find the nature of correlation between two variables (b) Compute the extent of correlation between two variables (c) Obtain the mathematical relationship between two variables (d) Both (a) and (c).

	Ans : (a)
16.	Pearson's correlation coefficient is used for finding (a) Correlation for any type of relation (b) Correlation for linear relation only (c) Correlation for curvilinear relation only (d) Both (b) and (c). Ans : (b)
17.	Product moment correlation coefficient is considered for (a) Finding the nature of correlation (b) Finding the amount of correlation (c) Both (a) and (b) (d) Either (a) and (b). Ans : (c)
18.	If the value of correlation coefficient is positive, then the points in a scatter diagram tend to cluster (a) From lower left corner to upper right corner (b) From lower left corner to lower right corner (c) From lower right corner to upper left corner (d) From lower right corner to upper right corner. Ans : (a)
19.	When $r = 1$, all the points in a scatter diagram would lie (a) On a straight line directed from lower left to upper right (b) On a straight line directed from upper left to lower right (c) On a straight line (d) Both (a) and (b). Ans : (a) [SM, MTP Jan 25, May 20]
20.	Product moment correlation coefficient may be defined as the ratio of (a) The product of standard deviations of the two variables to the covariance between them

	(b) The covariance between the variables to the product of the variances of them (c) The covariance between the variables to the product of their standard deviations (d) Either (b) or (c). Ans : (c)
21.	The covariance between two variables is (a) Strictly positive (b) Strictly negative (c) Always 0 (d) Either positive or negative or zero. Ans : (d) [SM, MTP May 19, May 21, May 22, Nov 22]
22.	The coefficient of correlation between two variables (a) Can have any unit. (b) Is expressed as the product of units of the two variables (c) Is a unit free measure (d) None of these. Ans : (c)
23.	What are the limits of the correlation coefficient? (a) No limit (b) -1 and 1, excluding the limits (c) 0 and 1, including the limits (d) -1 and 1, including the limits Ans : (d)
24.	In case the correlation coefficient between two variables is 1, the relationship between the two variables would be (a) $y = a + bx$ (b) $y = a + bx, b > 0$ (c) $y = a + bx, b < 0$ (d) $y = a + bx$, both a and b being positive. Ans : (b)
25.	If the relationship between two variables x and y is given by $2x + 3y + 4 = 0$, then the value of the correlation coefficient between x and y is (a) 0 (b) 1 (c) -1 (d) negative. Ans : (c)

	[SM, MTP Nov 18]
26.	For finding correlation between two attributes, we consider (a) Pearson's correlation coefficient (b) Scatter diagram (c) Spearman's rank correlation coefficient (d) Coefficient of concurrent deviations. Ans : (c)
27.	For finding the degree of agreement about beauty between two Judges in a Beauty Contest, we use (a) Scatter diagram (b) Coefficient of rank correlation (c) Coefficient of correlation (d) Coefficient of concurrent deviation. Ans : (b)
28.	If there is a perfect disagreement between the marks in Geography and Statistics, then what would be the value of rank correlation coefficient? (a) Any value (b) Only 1 (c) Only -1 (d) (b) or (c) Ans : (c)
29.	When we are not concerned with the magnitude of the two variables under discussion, we consider (a) Rank correlation coefficient (b) Product moment correlation coefficient (c) Coefficient of concurrent deviation (d) (a) or (b) but not (c). Ans : (c)
30.	What is the quickest method to find correlation between two variables? (a) Scatter diagram (b) Method of concurrent deviation (c) Method of rank correlation (d) Method of product moment correlation Ans : (b)
31.	What are the limits of the coefficient of concurrent deviations?

	(a) No limit (b) Between -1 and 0, including the limiting values (c) Between 0 and 1, including the limiting values (d) Between -1 and 1, the limiting values inclusive Ans : (d)
32.	If there are two variables x and y, then the number of regression equations could be (a) 1 (b) 2 (c) Any number (d) 3 Ans : (b)
33.	Since Blood Pressure of a person depends on age, we need to consider (a) The regression equation of Blood Pressure on age (b) The regression equation of age on Blood Pressure (c) Both (a) and (b) (d) Either (a) or (b). Ans : (a)
34.	The method applied for deriving the regression equations is known as (a) Least squares (b) Concurrent deviation (c) Product moment (d) Normal equation. Ans : (a)
35.	The difference between the observed value and the estimated value in regression analysis is known as (a) Error (b) Residue (c) Deviation (d) (a) or (b). Ans : (d)
36.	The errors in case of regression equations are (a) Positive (b) Negative (c) Zero (d) All these. Ans : (d)
37.	The regression line of y on x is derived by (a) The minimisation of vertical distances in the scatter diagram

	(b) The minimisation of horizontal distances in the scatter diagram (c) Both (a) and (b) (d) (a) or (b). Ans : (a)
38.	The two lines of regression become identical when (a) $r = 1$ (b) $r = -1$ (c) $r = 0$ (d) (a) or (b). Ans : (d) [SM, MTP Nov 20, Nov 18, May 19, Nov 22]
39.	What are the limits of the two regression coefficients? (a) No limit (b) Must be positive (c) One positive and the other negative (d) Product of the regression coefficient must be numerically less than unity. Ans : (d)
40.	The regression coefficients remain unchanged due to a (a) Shift of origin (b) Shift of scale (c) Both (a) and (b) (d) (a) or (b). Ans : (a) [SM, MTP Nov 20, May 22]
41.	If the coefficient of correlation between two variables is -0.9, then the coefficient of determination is (a) 0.9 (b) 0.81 (c) 0.1 (d) 0.19 Ans : (b) [SM, MTP Nov 20, May 21, May 22, RTP Sep 24]
42.	If the coefficient of correlation between two variables is 0.7 then the percentage of variation unaccounted for is (a) 70% (b) 30% (c) 51% (d) 49% Ans : (c)

	[SM, MTP Nov 21, May 19]
43.	If the coefficient of correlation between two variables is 0.8 then the percentage of variation unaccounted for is (a) 70%

(b) 30%
(c) 51%
(d) 36%
Ans : D
[MTP Jan 25, May 20, May 21]

SET B

1.	If for two variable x and y, the covariance, variance of x and variance of y are 40, 16 and 256 respectively, what is the value of the correlation coefficient? (a) 0.01 (b) 0.625 (c) 0.4 (d) 0.5 Ans : (b) [SM, MTP Jan 25, May 18, Nov 18, May 20, June 24, May 24]
2.	If $\text{cov}(x, y) = 15$, what restrictions should be put for the standard deviations of x and y? (a) No restriction. (b) The product of the standard deviations should be more than 15. (c) The product of the standard deviations should be less than 15. (d) The sum of the standard deviations should be less than 15. Ans : (b) [SM, MTP Nov 18]
3.	If the covariance between two variables is 20 and the variance of one of the variables is 16, what would be the variance of the other variable? (a) $S_y^2 \geq 25$ (b) More than 10 (c) Less than 10 (d) More than 1.25 Ans : (a) [SM, MTP Nov 21]
4.	If $y = a + bx$, then what is the coefficient of correlation between x and y? (a) 1 (b) -1 (c) 1 or -1 according as $b > 0$ or $b < 0$ (d) none of these.

	Ans : (c)																								
5.	If $r = 0.6$ then the coefficient of non-determination is (a) 0.4 (b) -0.6 (c) 0.36 (d) 0.64 Ans : (d) [SM, MTP May 19, Jan 25, Nov 23, April 24, July 24]																								
6.	If $u + 5x = 6$ and $3y - 7v = 20$ and the correlation coefficient between x and y is 0.58 then what would be the correlation coefficient between u and v ? (a) 0.58 (b) -0.58 (c) -0.84 (d) 0.84 Ans : (b) [SM, MTP May 21]																								
7.	If the relation between x and u is $3x + 4u + 7 = 0$ and the correlation coefficient between x and y is -0.6, then what is the correlation coefficient between u and y ? (a) -0.6 (b) 0.8 (c) 0.6 (d) -0.8 Ans : (c) [SM, MTP Jan 25, May 20]																								
8.	"From the following data <table><tr><td>x:</td><td>2</td><td>3</td><td>5</td><td>4</td><td>7</td></tr><tr><td>y:</td><td>4</td><td>6</td><td>7</td><td>8</td><td>10</td></tr></table> The coefficient of correlation was found to be 0.93. What is the correlation between u and v as given Below? <table><tr><td>u:</td><td>-3</td><td>2</td><td>0</td><td>-1</td><td>2</td></tr><tr><td>v:</td><td>-4</td><td>2</td><td>-1</td><td>0</td><td>2</td></tr></table>	x:	2	3	5	4	7	y:	4	6	7	8	10	u:	-3	2	0	-1	2	v:	-4	2	-1	0	2
x:	2	3	5	4	7																				
y:	4	6	7	8	10																				
u:	-3	2	0	-1	2																				
v:	-4	2	-1	0	2																				

	(a) -0.93 (b) 0.93 (c) 0.57 (d) -0.57 Ans : (b)												
9.	"Referring to the data presented in Q. No. 8, what would be the correlation between u and v? <table><tr><td>u:</td><td>10</td><td>15</td><td>25</td><td>20</td><td>35</td></tr><tr><td>v:</td><td>-24</td><td>-36</td><td>-42</td><td>-48</td><td>-60</td></tr></table> (a) -0.6 (b) 0.6 (c) -0.93 (d) 0.93 Ans : (c)	u:	10	15	25	20	35	v:	-24	-36	-42	-48	-60
u:	10	15	25	20	35								
v:	-24	-36	-42	-48	-60								
10.	If the sum of squares of difference of ranks, given by two judges A and B, of 8 students is 21, what is the value of rank correlation coefficient? (a) 0.7 (b) 0.65 (c) 0.75 (d) 0.8 Ans : (c) [SM, MTP May 19, May 21]												
11.	If the rank correlation coefficient between marks in management and mathematics for a group of student is 0.6 and the sum of squares of the differences in ranks is 66, what is the number of students in the group? (a) 10 (b) 9 (c) 8 (d) 11 Ans : (a) [SM, MTP Dec 24]												
12.	While computing rank correlation coefficient between profit and investment for the last 6 years of a company the difference in rank for a year was taken 3 instead of 4. What is the rectified rank correlation coefficient if it is known that the original value of rank correlation coefficient was 0.4? (a) 0.3 (b) 0.2 (c) 0.25 (d) 0.28 Ans : (b)												

13.	For 10 pairs of observations, No. of concurrent deviations was found to be 4. What is the value of the coefficient of concurrent deviation? (a) $\sqrt{0.2}$ (b) $-\sqrt{0.2}$ (c) $1/3$ (d) $-1/3$ Ans : (d)												
14.	The coefficient of concurrent deviation for p pairs of observations was found to be $1/\sqrt{3}$. If the number of concurrent deviations was found to be 6, then the value of p is. (a) 10 (b) 9 (c) 8 (d) none of these Ans : (a)												
15.	"What is the value of correlation coefficient due to Pearson on the basis of the following data: <table><tr><td>x:</td><td>-5</td><td>-4</td><td>-3</td><td>-2</td><td>-1</td></tr><tr><td>y:</td><td>27</td><td>18</td><td>11</td><td>6</td><td>3</td></tr></table> (a) 1 (b) -1 (c) 0 (d) -0.5 Ans : (c)	x:	-5	-4	-3	-2	-1	y:	27	18	11	6	3
x:	-5	-4	-3	-2	-1								
y:	27	18	11	6	3								
16.	"Following are the two normal equations obtained for deriving the regression line of y and x: $5a + 10b = 40$ $10a + 25b = 95$ The regression line of y on x is given by" (a) $2x + 3y = 5$ (b) $2y + 3x = 5$ (c) $y = 2 + 3x$ (d) $y = 3 + 5x$ Ans : (c)												
17.	If the regression line of y on x and of x on y are given by $2x + 3y = -1$ and $5x + 6y = -1$ then the arithmetic means of x and y are given by (a) (1, -1) (b) (-1, 1) (c) (-1, -1) (d) (2, 3) Ans : (a)												

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18.	Given the regression equations as $3x + y = 13$ and $2x + 5y = 20$, which one is the regression equation of y on x ? (a) 1st equation (b) 2nd equation (c) both (a) and (b) (d) none of these. Ans : (c) [SM, MTP Dec 24]
19.	Given the following equations: $2x - 3y = 10$ and $3x + 4y = 15$, which one is the regression equation of x on y ? (a) 1st equation (b) 2nd equation (c) both the equations (d) none of these Ans : (d)
20.	If $u = 2x + 5$ and $v = -3y - 6$ and regression coefficient of y on x is 2.4, what is the regression coefficient of v on u ? (a) 3.6 (b) -3.6 (c) 2.4 (d) -2.4 Ans : (b)
21.	If $4y - 5x = 15$ is the regression line of y on x and the coefficient of correlation between x and y is 0.75, what is the value of the regression coefficient of x on y ? (a) 0.45 (b) 0.9375 (c) 0.6

	(d) none of these Ans : (a) [SM, MTP Nov 22]
22.	If the regression line of y on x and that of x on y are given by $y = -2x + 3$ and $8x = -y + 3$ respectively, what is the coefficient of correlation between x and y ? (a) 0.5 (b) $-1/\sqrt{2}$ (c) -0.5 (d) none of these Ans : (c)
23.	If the regression coefficient of y on x , the coefficient of correlation between x and y and variance of y are $-3/4$, $\sqrt{3}/2$ and 4 respectively, what is the variance of x ? (a) $\frac{2}{\sqrt{3}}$ (b) $16/3$ (c) $4/3$ (d) 4 Ans : (b)
24.	If $y = 3x + 4$ is the regression line of y on x and the arithmetic mean of x is -1, what is the arithmetic mean of y ? (a) 1 (b) -1 (c) 7 (d) none of these Ans : (a) [SM, MTP May 21]

SET C

1.	"What is the coefficient of correlation from the following data? <table><tr><td>x:</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>y:</td><td>8</td><td>6</td><td>7</td><td>5</td><td>5</td></tr></table> (a) 0.75 (b) -0.75 (c) -0.85 (d) 0.82 Ans : (c)	x:	1	2	3	4	5	y:	8	6	7	5	5
x:	1	2	3	4	5								
y:	8	6	7	5	5								
2.	"The coefficient of correlation between x and y where <table><tr><td>x:</td><td>64</td><td>60</td><td>67</td><td>59</td><td>69</td></tr><tr><td>y:</td><td>57</td><td>60</td><td>73</td><td>62</td><td>68</td></tr></table> is	x:	64	60	67	59	69	y:	57	60	73	62	68
x:	64	60	67	59	69								
y:	57	60	73	62	68								

	(a) 0.655 (b) 0.68 (c) 0.73 (d) 0.758 Ans : (a)																											
3.	What is the coefficient of correlation between the ages of the husbands and wives from the following data ? <table><tr><td>Age of Husband</td><td>46</td><td>45</td><td>42</td><td>40</td><td>38</td><td>35</td><td>32</td><td>30</td><td>27</td><td>25</td></tr><tr><td>Age of Wife</td><td>37</td><td>35</td><td>31</td><td>28</td><td>30</td><td>25</td><td>23</td><td>19</td><td>19</td><td>18</td></tr></table> (a) 0.58 (b) 0.98 (c) 0.89 (d) 0.92 Ans : (b)	Age of Husband	46	45	42	40	38	35	32	30	27	25	Age of Wife	37	35	31	28	30	25	23	19	19	18					
Age of Husband	46	45	42	40	38	35	32	30	27	25																		
Age of Wife	37	35	31	28	30	25	23	19	19	18																		
4.	The following results relate to bivariate data on (x, y): $\Sigma xy = 414$, $\Sigma x = 120$, $\Sigma y = 90$, $\Sigma x^2 = 600$, $\Sigma y^2 = 300$, $n = 30$. Later on, it was known that two pairs of observations (12, 11) and (6, 8) were wrongly taken, the correct pairs of observations being (10, 9) and (8, 10). The corrected value of the correlation coefficient is (a) 0.752 (b) 0.768 (c) 0.846 (d) 0.953 Ans : (c)																											
5.	The following table provides the distribution of items according to size groups and also the number of defectives: <table><tr><td>Size group:</td><td>9-11</td><td>11-13</td><td>13-15</td><td>15-17</td><td>17-19</td></tr><tr><td>No. of items:</td><td>250</td><td>350</td><td>400</td><td>300</td><td>150</td></tr><tr><td>No. of defective items:</td><td>25</td><td>70</td><td>60</td><td>45</td><td>20</td></tr></table> The correlation coefficient between size and defectives is (a) 0.25 (b) 0.12 (c) 0.14 (d) 0.07 Ans : (d)	Size group:	9-11	11-13	13-15	15-17	17-19	No. of items:	250	350	400	300	150	No. of defective items:	25	70	60	45	20									
Size group:	9-11	11-13	13-15	15-17	17-19																							
No. of items:	250	350	400	300	150																							
No. of defective items:	25	70	60	45	20																							
6.	For two variables x and y, it is known that $\text{cov}(x, y) = 8$, $r = 0.4$, variance of x is 16 and sum of squares of deviation of y from its mean is 250. The number of observations for this bivariate data is (a) 7 (b) 8 (c) 9 (d) 10 Ans : (d)																											
7.	Eight contestants in a musical contest were ranked by two judges A and B in the following manner: <table><tr><td>Serial Number of the contestants:</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><td>Rank by Judge A:</td><td>7</td><td>6</td><td>2</td><td>4</td><td>5</td><td>3</td><td>1</td><td>8</td></tr><tr><td>Rank by Judge B:</td><td>5</td><td>4</td><td>6</td><td>3</td><td>8</td><td>2</td><td>1</td><td>7</td></tr></table> The rank correlation coefficient is (a) 0.65 (b) 0.63 (c) 0.60	Serial Number of the contestants:	1	2	3	4	5	6	7	8	Rank by Judge A:	7	6	2	4	5	3	1	8	Rank by Judge B:	5	4	6	3	8	2	1	7
Serial Number of the contestants:	1	2	3	4	5	6	7	8																				
Rank by Judge A:	7	6	2	4	5	3	1	8																				
Rank by Judge B:	5	4	6	3	8	2	1	7																				

	(d) 0.57 Ans : (d)																																	
8.	"Following are the marks of 10 students in Botany and Zoology: <table border="1"><tr><td>Serial No.</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>Marks in Botany</td><td>58</td><td>43</td><td>50</td><td>19</td><td>28</td><td>24</td><td>77</td><td>34</td><td>29</td><td>75</td></tr><tr><td>Marks in Zoology</td><td>62</td><td>63</td><td>79</td><td>56</td><td>65</td><td>54</td><td>70</td><td>59</td><td>55</td><td>69</td></tr></table> The coefficient of rank correlation between marks in Botany and Zoology is" (a) 0.65 (b) 0.70 (c) 0.72 (d) 0.75 Ans : (c)	Serial No.	1	2	3	4	5	6	7	8	9	10	Marks in Botany	58	43	50	19	28	24	77	34	29	75	Marks in Zoology	62	63	79	56	65	54	70	59	55	69
Serial No.	1	2	3	4	5	6	7	8	9	10																								
Marks in Botany	58	43	50	19	28	24	77	34	29	75																								
Marks in Zoology	62	63	79	56	65	54	70	59	55	69																								
9.	"What is the value of Rank correlation coefficient between the following marks in Physics and Chemistry: <table border="1"><tr><td>Roll No.:</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>Marks in Physics:</td><td>25</td><td>30</td><td>46</td><td>30</td><td>55</td><td>80</td></tr><tr><td>Marks in Chemistry:</td><td>30</td><td>25</td><td>50</td><td>40</td><td>50</td><td>78</td></tr></table> (a) 0.782 (b) 0.696 (c) 0.932 (d) 0.857 Ans : (d)	Roll No.:	1	2	3	4	5	6	Marks in Physics:	25	30	46	30	55	80	Marks in Chemistry:	30	25	50	40	50	78												
Roll No.:	1	2	3	4	5	6																												
Marks in Physics:	25	30	46	30	55	80																												
Marks in Chemistry:	30	25	50	40	50	78																												
10.	What is the coefficient of concurrent deviations from the following data : <table border="1"><tr><td>Supply</td><td>68</td><td>43</td><td>38</td><td>78</td><td>66</td><td>83</td><td>38</td><td>23</td><td>83</td><td>63</td><td>53</td></tr><tr><td>Demand</td><td>65</td><td>60</td><td>55</td><td>61</td><td>35</td><td>75</td><td>45</td><td>40</td><td>85</td><td>80</td><td>85</td></tr></table> (a) 0.82 (b) 0.85 (c) 0.89 (d) -0.81 Ans : (c)	Supply	68	43	38	78	66	83	38	23	83	63	53	Demand	65	60	55	61	35	75	45	40	85	80	85									
Supply	68	43	38	78	66	83	38	23	83	63	53																							
Demand	65	60	55	61	35	75	45	40	85	80	85																							
11.	What is the coefficient of concurrent deviations from the following data : <table border="1"><tr><td>Year</td><td>1996</td><td>1997</td><td>1998</td><td>1999</td><td>2000</td><td>2001</td><td>2002</td><td>2003</td></tr><tr><td>Price</td><td>35</td><td>38</td><td>40</td><td>33</td><td>45</td><td>48</td><td>49</td><td>52</td></tr><tr><td>Demand</td><td>36</td><td>35</td><td>31</td><td>36</td><td>30</td><td>29</td><td>27</td><td>24</td></tr></table> (a) -1 (b) 0.43 (c) 0.5 (d) $\sqrt{2}$ Ans : (a)	Year	1996	1997	1998	1999	2000	2001	2002	2003	Price	35	38	40	33	45	48	49	52	Demand	36	35	31	36	30	29	27	24						
Year	1996	1997	1998	1999	2000	2001	2002	2003																										
Price	35	38	40	33	45	48	49	52																										
Demand	36	35	31	36	30	29	27	24																										
12.	"The regression equation of y on x for the following data: <table border="1"><tr><td>x</td><td>41</td><td>82</td><td>62</td><td>37</td><td>58</td><td>96</td><td>127</td><td>74</td><td>123</td><td>100</td></tr><tr><td>y</td><td>28</td><td>56</td><td>35</td><td>17</td><td>42</td><td>85</td><td>105</td><td>61</td><td>98</td><td>73</td></tr></table> Is given by (a) $y = 1.2x - 15$ (b) $y = 1.2x + 15$ (c) $y = 0.93x - 14.68$ (d) $y = 1.5x - 10.89$ Ans : (c)	x	41	82	62	37	58	96	127	74	123	100	y	28	56	35	17	42	85	105	61	98	73											
x	41	82	62	37	58	96	127	74	123	100																								
y	28	56	35	17	42	85	105	61	98	73																								
13.	The following data relate to the heights of 10 pairs of fathers and sons:																																	

	(175, 173), (172, 172), (167, 171), (168, 171), (172, 173), (171, 170), (174, 173), (176, 175) (169, 170), (170, 173) The regression equation of height of son on that of father is given by (a) $y = 100 + 5x$ (b) $y = 102.60 + 0.405x$ (c) $y = 89.653 + 0.582x$ (d) $y = 88.758 + 0.562x$ Ans : (b)																
14.	The two regression coefficients for the following data: <table border="1"><tr><td>X</td><td>38</td><td>23</td><td>43</td><td>33</td><td>28</td></tr><tr><td>Y</td><td>28</td><td>23</td><td>43</td><td>38</td><td>8</td></tr></table> (a) 1.2 and 0.4 (b) 1.6 and 0.8 (c) 1.7 and 0.8 (d) 1.8 and 0.3 Ans : (a)	X	38	23	43	33	28	Y	28	23	43	38	8				
X	38	23	43	33	28												
Y	28	23	43	38	8												
15.	For $y = 25$, what is the estimated value of x , from the following data: <table border="1"><tr><td>X:</td><td>11</td><td>12</td><td>15</td><td>16</td><td>18</td><td>19</td><td>21</td></tr><tr><td>Y:</td><td>21</td><td>15</td><td>13</td><td>12</td><td>11</td><td>10</td><td>9</td></tr></table> (a) 15 (b) 13.926 (c) 6.07 (d) 14.986 Ans : (c)	X:	11	12	15	16	18	19	21	Y:	21	15	13	12	11	10	9
X:	11	12	15	16	18	19	21										
Y:	21	15	13	12	11	10	9										
16.	Given the following Data : <table border="1"><tr><td>Variable</td><td>x</td><td>y</td></tr><tr><td>Mean</td><td>80</td><td>98</td></tr><tr><td>Variance</td><td>4</td><td>9</td></tr></table> Coefficient of correlation = 0.6 What is the most likely value of y when $x = 90$? (a) 90 (b) 103 (c) 104 (d) 107 Ans : (d)	Variable	x	y	Mean	80	98	Variance	4	9							
Variable	x	y															
Mean	80	98															
Variance	4	9															
17.	The two lines of regression are given by $8x + 10y = 25$ and $16x + 5y = 12$ respectively. If the variance of x is 25, what is the standard deviation of y ? (a) 16 (b) 8 (c) 64 (d) 4 Ans : (b)																
18.	Two lines of regression are given by $5x+7y-22=0$ and $6x+2y-22=0$. If the variance of y is 15, find the standard deviation of x ? (a) $\sqrt{5}$ (b) $\sqrt{7}$ (c) $\sqrt{6}$ (d) $\sqrt{8}$ Ans : (b)																

[MTP Nov 18]

19.

Given below the information about the capital employed and profit earned by a company over the last twenty five years:

	Mean	SD
Capital Employed (000 Rs.)	62	5
Profit Earned (000 Rs.)	25	6

Correlation coefficient between capital employed and profit = 0.92. The sum of the Regression coefficients for the above data would be:

(a) 1.871

(b) 2.358

(c) 1.968

(d) 2.346

Ans : (a)

20.

"The coefficient of correlation between cost of advertisement and sales of a product on the basis of the following data:

Ad Cost (000 Rs.)	75	81	85	105	93	113	121	125
Sales (000 000 Rs.)	35	45	59	75	43	79	87	95

Is"

(a) 0.85

(b) 0.89

(c) 0.95

(d) 0.98

Ans : (c)

ADDITIONAL QUESTION BANK

1.	_____ is concerned with the measurement of the "strength of association" between variables. (a) correlation (b) regression (c) both (d) none Ans : (a)	(b) directly correlated (c) both (d) none Ans : (c)
2.	_____ gives the mathematical relationship of the variables. (a) correlation (b) regression (c) both (d) none Ans : (b)	4. If high values of one tend to low values of the other, they are said to be (a) negatively correlated (b) inversely correlated (c) both (d) none Ans : (c)
3.	When high values of one variable are associated with high values of the other & low values of one variable are associated with low values of another, then they are said to be (a) positively correlated	5. Correlation coefficient between two variables is a measure of their linear relationship . (a) True (b) False (c) both (d) none Ans : (a)

6.	Correlation coefficient is dependent of the choice of both origin & the scale of observations. (a) True (b) False (c) both (d) none Ans : (b)
7.	Correlation coefficient is a pure number. (a) True (b) False (c) both (d) none Ans : (a)
8.	Correlation coefficient is _____ of the units of measurement. (a) dependent (b) independent (c) both (d) none Ans : (b) [SM, MTP May 18, Nov 18, June 24, May 24]
9.	The value of correlation coefficient lies between (a) -1 and +1 (b) -1 and 0 (c) 0 and 1 Inclusive of these two values (d) none. Ans : (a)
10.	Correlation coefficient can be found out by (a) Scatter Diagram (b) Rank Method (c) both (d) none. Ans : (b)
11.	Covariance measures _____ variations of two variables. (a) joint (b) single (c) both (d) none Ans : (a)
12.	In calculating the Karl Pearson's coefficient of correlation it is necessary that the data should be of numerical measurements.

	(a) valid (b) not valid (c) both (d) none Ans : (a)
13.	Rank correlation coefficient lies between (a) 0 to 1 (b) -1 to +1 inclusive of these value (c) -1 to 0 (d) Both Ans : (b)
14.	A coefficient near +1 indicates tendency for the larger values of one variable to be associated with the larger values of the other. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
15.	In rank correlation coefficient the association need not be linear. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
16.	In rank correlation coefficient only an increasing/decreasing relationship is required. (a) FALSE (b) TRUE (c) both (d) none Ans : (b)
17.	Great advantage of _____ is that it can be used to rank attributes which can not be expressed by way of numerical value (a) concurrent correlation (b) regression (c) rank correlation (d) none Ans : (C)
18.	The sum of the difference of rank is (a) 1 (b) -1 (c) 0

	(d) none. Ans : (C)
19.	Karl Pearson's coefficient is defined from (a) ungrouped data (b) grouped data (c) both (d) none. Ans : (b)
20.	Correlation methods are used to study the relationship between two time series of data which are recorded annually, monthly, weekly, daily and so on. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
21.	Age of Applicants for life insurance and the premium of insurance - correlation is (a) positive (b) negative (c) zero (d) none Ans : (a)
22.	"Unemployment index and the purchasing power of the common man" _____ Correlation is (a) positive (b) negative (c) zero (d) none Ans : (b)
23.	Production of pig iron and soot content in Durgapur - Correlations are (a) positive (b) negative (c) zero (d) none Ans : (a)
24.	"Demand for goods and their prices under normal times" _____ Correlation is (a) positive (b) negative (c) zero (d) none Ans : (b)

[SM, MTP May 21]

25.	_____ is a relative measure of association between two or more variables. (a) Coefficient of correlation (b) Coefficient of regression (c) both (d) none Ans : (a)
26.	The lines of regression passes through the points, bearing _____ no. of points on both sides (a) equal (b) unequal (c) zero (d) none Ans : (d)
27.	Under Algebraic Method we get _____ linear equations . (a) one (b) two (c) three (d) none Ans : (b)
28.	In linear equations $Y = a + bX$ and $X = a + bY$ 'a' is the (a) intercept of the line (b) slope (c) both (d) none Ans : (a)
29.	In linear equations $Y = a + bX$ and $X = a + bY$ 'b' is the (a) intercept of the line (b) slope of the line (c) both (d) none Ans : (b)
30.	The regression equations $Y = a + bX$ and $X = a + bY$ are based on the method of (a) greatest squares (b) least squares (c) both (d) none Ans : (b)
31.	The line $Y = a + bX$ represents the regression equation of (a) Y on X (b) X on Y (c) both (d) none

	Ans : (a)
32.	The line $X = a + bY$ represents the regression equation of (a) Y on X (b) X on Y (c) both (d) none Ans : (b)
33.	Two regression lines always intersect at the means. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
34.	r, b_{xy}, b_{yx} all have _____ sign. (a) different (b) same (c) both (d) none Ans : (b) [SM, MTP May 21, Nov 18]
35.	The regression coefficients are zero if r is equal to (a) 2 (b) -1 (c) 1 (d) 0 Ans : (d)
36.	The regression lines are identical if r is equal to (a) +1 (b) -1 (c) ± 1 (d) 0 Ans : (c)
37.	The regression lines are perpendicular to each other if r is equal to (a) 0 (b) +1 (c) -1 (d) ± 1 Ans : (a) [SM, MTP Nov 23, July 24]
38.	The sum of the deviations at the Y's or the X's from their regression lines are zero. This statements is _____ (a) TRUE (b) FALSE (c) both

	(d) none Ans : (a)
39.	The coefficient of determination is defined by the formula (a) $r^2 = 1 - \frac{\text{unexplained variance}}{\text{total variance}}$ (b) $r^2 = \frac{\text{unexplained variance}}{\text{total variance}}$ (c) both (d) none Ans : (c)
40.	If the line $Y = 13 - 3X/2$ is the regression equation of y on x then b_{yx} is (a) $2/3$ (b) $-2/3$ (c) $3/2$ (d) $-3/2$ Ans : (d)
41.	In the line $Y = 19 - 5X/2$ is the regression equation x on y then b_{xy} is, (a) $19/2$ (b) $5/2$ (c) $-5/2$ (d) $-2/5$ Ans : (d)
42.	The line $X = 31/6 - Y/6$ is the regression equation of (a) Y on X (b) X on Y (c) both (d) we can not say Ans : (d)
43.	In the regression equation x on y, $X = 35/8 - 2Y/5$, b_{xy} is equal to (a) $-2/5$ (b) $35/8$ (c) $2/5$ (d) $5/2$ Ans : (a)
44.	The square of coefficient of correlation 'r' is called the coefficient of (a) determination (b) regression (c) both (d) none Ans : (a)
45.	A relationship $r^2 = 1 - \frac{500}{300}$ is not possible (a) TRUE (b) FALSE (c) both

	(d) none Ans : (a)
46.	Whatever may be the value of r , positive or negative, its square will be (a) negative only (b) positive only (c) zero only (d) none only Ans : (b)
47.	Simple correlation is called (a) linear correlation (b) nonlinear correlation (c) both (d) none Ans : (a)
48.	A scatter diagram indicates the type of correlation between two variables. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
49.	If the pattern of points (or dots) on the scatter diagram shows a linear path diagonally across the graph paper from the bottom left- hand corner to the top right, correlation will be (a) negative (b) zero (c) positive (d) none Ans : (c)
50.	The correlation coefficient being +1 if the slope of the straight line in a scatter diagram is (a) positive (b) negative (c) zero (d) none Ans : (a)
51.	The correlation coefficient being -1 if the slope of the straight line in a scatter diagram is (a) positive (b) negative (c) zero (d) none Ans : (b)
52.	The more scattered the points are around a straight line in a scattered diagram the

	_____ is the correlation coefficient. (a) zero (b) more (c) less (d) none Ans : (c)
53.	If the values of y are not affected by changes in the values of x , the variables are said to be (a) correlated (b) uncorrelated (c) both (d) zero Ans : (b)
54.	If the amount of change in one variable tends to bear a constant ratio to the amount of change in the other variable, then correlation is said to be (a) non linear (b) linear (c) both (d) none Ans : (b)
55.	Variance may be positive, negative or zero. (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
56.	Covariance may be positive, negative or zero. (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
57.	Correlation coefficient between x and y = correlation coefficient between u and v (a) TRUE (b) FALSE (c) both (d) none Ans : (b)
58.	In case ' The ages of husbands and wives' _____ correlation is (a) positive (b) negative

	(c) zero (d) none Ans : (a)
59.	In case 'Shoe size and intelligence' (a) positive correlation (b) negative correlation (c) no correlation (d) none Ans : (c)
60.	In case 'Insurance companies' profits and the no of claims they have to pay " (a) positive correlation (b) negative correlation (c) no correlation (d) none Ans : (b)
61.	In case 'Years of education and income' (a) positive correlation (b) negative correlation (c) no correlation (d) none Ans : (a)
62.	In case 'Amount of rainfall and yield of crop' (a) positive correlation (b) negative correlation (c) no correlation (d) none Ans : (a)
63.	For calculation of correlation coefficient, a change of origin is (a) not possible (b) possible (c) both (d) none Ans : (b)
64.	The relation $r_{xy} = \text{cov}(x,y)/\sigma_x \cdot \sigma_y$ is (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
65.	A small value of r indicates only a _____linear type of relationship between the variables. (a) good (b) poor (c) maximum

	(d) highest Ans : (b)
66.	Two regression lines coincide when (a) $r = 0$ (b) $r = 2$ (c) $r = +1$ (d) none Ans : (c) [SM, RTP Jan 25]
67.	Neither y nor x can be estimated by a linear function of the other variable when r is equal to (a) +1 (b) -1 (c) 0 (d) None Ans : (c)
68.	When $r = 0$ then $\text{cov}(x,y)$ is equal to (a) +1 (b) -1 (c) 0 (d) None Ans : (c) [SM, MTP Nov 20]
69.	When the variables are not independent, the correlation coefficient may be zero (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
70.	If two variables are independent their covariance is (a) 1 (b) -1 (c) 0 (d) none of these Ans: (c) [MTP Nov 19]
71.	b_{xy} is called regression coefficient of (a) x on y (b) y on x (c) both (d) none Ans : (a)
72.	b_{yx} is called regression coefficient of (a) x on y (b) y on x (c) both (d) none

	Ans : (b)
73.	The slopes of the regression line of y on x is (a) b_{yx} (b) b_{xy} (c) b_{xx} (d) b_{yy} Ans : (a)
74.	The slopes of the regression line of x on y is (a) b_{yx} (b) b_{xy} (c) $1/b_{xy}$ (d) $1/b_{yx}$ Ans : (b)
75.	The angle between the regression lines depends on (a) correlation coefficient (b) regression coefficient (c) both (d) none Ans : (a)
76.	If x and y satisfy the relationship $y = -5 + 7x$, the value of r is (a) 0 (b) -1 (c) +1 (d) None Ans : (c)
77.	If b_{yx} and b_{xy} are negative, r is (a) positive (b) negative (c) zero (d) none Ans : (b)
78.	Correlation coefficient r lie between the regression coefficients b_{yx} and b_{xy} (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
79.	Since the correlation coefficient r cannot be greater than 1 numerically, the product of the regression must (a) not exceed 1 (b) exceed 1 (c) be zero (d) none Ans : (a)

80.	The correlation coefficient r is the _____ of the two regression coefficients b_{yx} and b_{xy} (a) A.M (b) G.M (c) H.M (d) None Ans : (b) [SM, MTP May 21]
81.	Which is true? (a) $b_{yx} = r \frac{\sigma_x}{\sigma_y}$ (b) $b_{yx} = r \frac{\sigma_y}{\sigma_x}$ (c) $b_{yx} = r \frac{\sigma_{xy}}{\sigma_x}$ (d) $b_{yx} = r \frac{\sigma_{yy}}{\sigma_x}$ Ans : (b)
82.	Maximum value of Rank Correlation coefficient is (a) -1 (b) +1 (c) 0 (d) None Ans : (b)
83.	The partial correlation coefficient lies between (a) -1 and +1 inclusive of these two value (b) 0 and +1 (c) -1 and (d) None Ans : (a)
84.	r_{12} is the correlation coefficient between (a) x_1 and x_2 (b) x_2 and x_1 (c) x_1 and x_3 (d) x_2 and x_3 Ans : (a) & (b)
85.	r_{12} is the same as r_{21} (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
86.	In case of employed persons 'Age and income' correlation is (a) positive (b) negative (c) zero (d) none

	Ans : (a)
87.	In case 'Speed of an automobile and the distance required to stop the car after applying brakes' - correlation is (a) positive (b) negative (c) zero (d) none Ans : (b)
88.	In case 'Sale of woollen garments and day temperature' _____ correlation is (a) positive (b) negative (c) zero (d) none Ans : (b)
89.	In case 'Sale of cold drinks and day temperature' _____ correlation is (a) positive (b) negative (c) zero (d) none Ans : (a)
90.	In case of 'Production and price per unit' - correlation is (a) positive (b) negative (c) zero (d) none Ans : (b)
91.	If slopes at two regression lines are equal then r is equal to (a) 1 (b) ± 1 (c) 0 (d) None Ans : (b)
92.	Co-variance measures the joint variations of two variables. (a) TRUE

	(b) FALSE (c) both (d) none Ans : (a)
93.	The minimum value of correlation coefficient is (a) 0 (b) -2 (c) 1 (d) -1 Ans : (d)
94.	The maximum value of correlation coefficient is (a) 0 (b) 2 (c) 1 (d) -1 Ans : (c) [SM, MTP June 24]
95.	When $r = 0$, the regression coefficients are (a) 0 (b) 1 (c) -1 (d) None Ans : (a)
96.	The regression equation of Y on X is, $2x + 3y + 50 = 0$. The value of b_{yx} is (a) $2/3$ (b) $-2/3$ (c) $-3/2$ (d) None Ans : (b)
97.	In Method of Concurrent Deviations, only the directions of change (Positive direction / Negative direction) in the variables are taken into account for calculation of (a) coefficient of S.D (b) coefficient of regression. (c) coefficient of correlation (d) none Ans : (c)

RTP AND MTP

1	Equations of two lines of regression are $4x + 3y + 7 = 0$ and $3x + 4y + 8 = 0$, the mean of x and y are (a) $5/7$ and $6/7$

	(b) $-4/7$ and $-11/7$ (c) 2 and 4 (d) None of these Ans : (b)

	[MTP May 18, June 24]
2	If two variables are uncorrelated then regression lines are (a) Parallel (b) Perpendicular (c) Coincident (d) inclined at 45° Ans : (b) [MTP May 18, June 24]
3.	Probable Error can be obtained using Correlation coefficient as (a) $0.675 \times \frac{1-r^2}{\sqrt{N}}$ (b) $\frac{2}{3} \times \frac{1+r^2}{\sqrt{N}}$ (c) $\frac{1+r^2}{N}$ (d) $\frac{1-r^2}{r^2}$ Ans : (a) [MTP May 18]
4	Standard Error of Correlation coefficient (a) $\frac{1-r^2}{\sqrt{N}}$ (b) $\frac{1+r^2}{\sqrt{N}}$ (c) $\frac{1+r^2}{N}$ (d) $\frac{1-r}{N}$ Ans : (a) [MTP May 18]
5	If the two regression co-efficients are 4 and 16 the percentage of unexplained variation is (a) 64 (b) 36 (c) 54 (d) 46 Ans : (b) [MTP Nov 18]
6	In a bivariate population, the linear regression lines $3x+y-2=0$ and $y+x=0$ then the coefficient of correlation is (a) 0 (b) $1/3$ (c) $-1/3$ (d) $-1/\sqrt{3}$ Ans : (d) [MTP Nov 18]
7	If three Judges appointed for a beauty competition, then how many different rank correlation coefficients are required to analyse the judge competition

	(a) 3 (b) 1 (c) 2 (d) 6 Ans : (a) [MTP Nov 18]														
8	For two variables x and y with the same mean the regression equation are $y = 2x - a$ and $x = 2y - \beta$; what is the value of common mean (a) -a (b) β (c) 0 (d) $-\beta$ Ans : (b) [MTP Nov 18]														
9	If one regression coefficient is greater than one, then other will be: (a) More than one (b) Equal to one (c) Less than one (d) Equal to minus one Ans: (c) [MTP June 24, Dec 23]														
10	If Y is dependent variable and X is Independent variable and the S.D. of X and Y are 5 and 8 respectively and Co-efficient of co-relation between X and Y is 0.8. Find the Regression coefficient of Y on X: (a) 0.78 (b) 1.28 (c) 6.8 (d) 0.32 Ans : B [MTP June 23, April 24]														
11	The coefficient of rank correlation between the ranking of following 6 students in two subjects Mathematics and Statistics is: <table><tr><td>Mathematics</td><td>3</td><td>5</td><td>8</td><td>4</td><td>7</td><td>1</td></tr><tr><td>Statistics</td><td>6</td><td>4</td><td>9</td><td>8</td><td>1</td><td>2</td></tr></table> (a) - 0.26 (b) 0.35 (c) 0.38 (d) 0.20 Ans : A [MTP June 23]	Mathematics	3	5	8	4	7	1	Statistics	6	4	9	8	1	2
Mathematics	3	5	8	4	7	1									
Statistics	6	4	9	8	1	2									
12	If $b_{yx} = 0.5$, $b_{xy} = 0.45$ then the value of correlation coefficient is:														

	(a) 0.23 (b) 0.25 (c) 0.39 (d) 0.47 Ans : D [MTP June 23]
13	The equations of the two lines of regression are $4x + 3y + 7 = 0$ and $3x + 4y + 8 = 0$. Find the correlation coefficient between x and y . (a) -0.75 (b) 0.25 (c) -0.92 (d) 1.25 Ans : A [MTP June 23]
14	Two variables X and Y are related as $4x + 3y = 7$ then correlation between x and y is (a) Perfect positive (b) Perfect negative (c) Zero (d) None of these Ans : B [MTP Dec 24]
15	If one of regression coefficient is _____ unity, the other must be _____ unity. (a) more than, more than (b) Less than, Less than (c) more than, less than (d) Positive, Negative Ans : C [MTP Dec 24, July 24, Nov 23]
16	Regression coefficient are (a) dependent of change of origin and of scale. (b) independent of both change of origin and of scale. (c) dependent of change of origin but not of scale. (d) independent of change of origin but not of scale Ans : D [MTP dec 24]
17	Correlation coefficient between X and Y will be negative when (a) X and Y are decreasing (b) X is increasing, Y is decreasing (c) X and Y are increasing (d) None of these

	Ans : b [MTP Dec 24]
18	If x and y are related by $y = 2x + 5$ and the SD and AM of x are known to be 5 and 10 respectively, then the coefficient of variation of y is (a) 25 (b) 30 (c) 40 (d) 20 Ans : (c) [MTP May 20, Nov 21, May 22]
19	The correlation coefficient between x and y is 0.8, the correlation coefficient between u and v are $2u + x + 4 = 0$ and $4v + 16x + 11 = 0$ (a) $r = 0.8$ (b) $r = -0.8$ (c) $r = 0$ (d) $r = +1$ Ans : (a) [MTP Nov 18]
20	What is the coefficient of variation of x , characterised by the following probability density function: $f(x) = \frac{1}{4\sqrt{2\pi}} e^{\frac{-(x-10)^2}{32}}$ for $-\alpha < x < \alpha$ (a) 50 (b) 60 (c) 40 (d) 30 Ans : (c) [MTP Nov 18]
21	What is the mean of X having the following density function ? $f(x) = \frac{1}{4\sqrt{2\pi}} e^{\frac{-(x-10)^2}{32}}$ for $-\alpha < x < \alpha$ (a) 10 (b) 4 (c) 40 (d) none of these Ans.(a) [MTP May 22, May 24]
22	If x and y are two correlated variables with correlation coefficient 0.60. If $u = 3x + 5$ and $v = 5y - 7$. The correlation coefficient of U and V is: (a) - 0.60 (b) 0.60 (c) 1 (d) 0.36

	Ans : (b) [MTP Nov 18]
23	If the coefficient of determination is 0.64 and the regression coefficient of x on y is 4 then the regression coefficient y on x is (a) 0.32 (b) 0.16 (c) 0.48 (d) 0.96 Ans: (b) [MTP Nov 18, May 19]
24	The covariance between two variables x and y is 72. The variances of x and y are 144 and 84. The coefficient of correlation is (a) 0.3333333333333333 (b) 0.8 (c) 0.6666666666666667 (d) 0.6 Ans: (c) [MTP Nov 18]
25	If the regression line of y on x and of x on y are given by $2x + 3y = -1$ and $5x + 6y = -1$ then the arithmetic means of x and y are given by (a) (1, -1) (b) (-1, 1) (c) (-1, -1) (d) (2, 3) Ans : (a) [MTP Nov 21, Nov 22]
26	If $r=0$, regression lines are: (a) Perpendicular (b) Parallel (c) They coincide (d) Cannot be determined Ans : (a) [MTP Nov 21]
27	There are two equations: $m + 3p = 2$ and $6n + 2q = 1$. Correlation coefficients for p and q is 0.5. Find the correlation coefficients of m and n (a) 0.6 (b) 0.5 (c) -0.5 (d) None of these Ans : (b) [MTP Nov 21]
28	The coefficients of correlation between

	two variables x and y is the simple _____ of two regression coefficients. (a) Harmonic Mean (b) Arithmetic Mean (c) Geometric Mean (d) None of the above Ans : (c) [MTP Nov 21, RTP Jan 25]
29	If the regression coefficient of y on x is 1.5 and the variances of x and y is 4/9 then the correlation coefficient is (a) 1 (b) -1 (c) 2.25 (d) 1 Ans : (d) [MTP May 19]
30	If the regression coefficient of y on x is 2.5, the correlation coefficient 0.6 and the SD is y of is 4, the SD of x is (a) 0.64 (b) 0.24 (c) 0.96 (d) 1.44 Ans : (c) [MTP May 19]
31	If the coefficient of correlation between x and y is 0.5, the covariance is 16 and if the standard deviation of x is 4 then Standard deviation of y is: (a) 4 (b) 8 (c) 16 (d) 64 Ans : (b) [MTP July 24, Nov 23]
32	For lines of regression $4x - 2y = 3$ and $2x - 3y = 5$, find bxy (a) $1/8$ (b) $1/2$ (c) $1/12$ (d) none of these Ans : (b) [MTP July 24]
33	The sum of the squares of differences in ranks of marks obtained in Physics and Chemistry by 10 students in a test is 150, then the coefficient of rank correlation by:

	(a) 0.849 (b) 0.091 (c) 0.909 (d) None of these Ans : (b) [MTP June 24, Nov 23]
34	The coefficient of Mean deviation about mean for the first 9 natural numbers? (a) 200/9 (b) 80 (c) 400/9 (d) 50 Ans : (c) [MTP Nov 18]
35	For the two of towns, the co-efficient of rank correlation between the people living below the poverty line and increase population in 0.50. The sum of the squares difference in ranks awarded to their factors is 82.50, find the number of towns (a) 10 (b) 11 (c) 12 (d) 9 Ans : (a) [MTP Nov 18]
36	The co variance between two variables X and Y is 8.4 and their variances are 25 and 36 respectively .Calculate Karl Pearson's coefficient of correlation between them. (a) 0.82 (b) 0.28 (c) 0.01 (d) 0.09 Ans.(b) [MTP May 22, April 24]
37	If the regression line of Y on X is given by $Y = X + 2$ and Karl Pearson's coefficient of correlation is 0.5 then $\frac{\sigma_y^2}{\sigma_x^2} =$ _____ (a) 3 (b) 2 (c) 4 (d) None of these Ans : c [MTP May 22, Nov 22]
38	For a $m \times n$ two way or bivariate frequency table, the maximum number of marginal distributions is coefficient (a) 1

	(b) 2 (c) $m+n$ (d) mn Ans : (b) [MTP May 22]
39	Consider the two regression lines $3x + 2y = 26$ & $6x + y = 31$, Find the mean values of x and y. (a) $\bar{x} = 4, \bar{y} = 7$ (b) $\bar{x} = 7, \bar{y} = 4$ (c) $\bar{x} = 5, \bar{y} = 6$ (d) None of these Ans : 1 [MTP May 22]
40	For 10 pairs of observations, number of concurrent deviations was found to be 4. What is the value of the coefficient of concurrent deviation? (a) $\sqrt{0.2}$ (b) $1/3$ (c) $-1/3$ (d) $-\sqrt{0.2}$ Ans : 3 [MTP May 22]
41	In a bivariate distribution if the rank correlation coefficient $r = 0.12$; $\Sigma D^2 = 146$; Then the no. of observed pairs (N) is (a) 9 (b) 8 (c) 7 (d) 10. Ans : 4 [MTP May 22]
42	If the regression equation of two variables are $5x - y = 4$ and $3x - 2y = 1$. Find the arithmetic means of x and y (a) 2,1 (b) 2,2 (c) 1,1 (d) Cannot be determined. Answer(c) [MTP May 23]
43	Correlation between unrelated variables is not because of: (a) Coefficient of non-determination (b) Existence of third variable related to both the variables (c) Spurious correlation (d) None of the above Answer(c)

	[MTP May 23]
44	If both the regression coefficients are negative, what will be coefficient of correlation? (a) Negative (b) Positive (c) Can be either positive or negative (d) Cannot be determined Answer(a) [MTP May 23]
45	In regression analysis, which of the following can be in the form of an index number? (a) Only dependent variable (b) Only independent variable (c) Both A and B (d) Need more information Answer(c) [MTP May 23]
46	A scatter diagram of two variables developing a pattern of multiple circular rings represents which kind of correlation? (a) Positive (b) Negative (c) Curvilinear (d) No correlation Answer(d) [MTP May 23]
47	Find the coefficient of correlation $2x+3y=2$ and $4x+3y=4$ (a) -0.71 (b) 0.71 (c) -0.5 (d) 0.5 Ans : A [MTP Nov 23]
48	If r is the Karl Pearson's coefficient of correlation in a bivariate distribution the two regression lines are at right angles when (a) $r = \pm 1$ (b) $r = 0$ (c) $r = \pm \infty$ (d) None Ans : (b) [MTP April 24]
49	The correlation coefficient between x and y is $-1/2$. The value of $b_{xy} = -1/8$. Find b_{yx}. (a) -2 (b) -4

	(c) 0 (d) 2 Ans : (a) [MTP April 24]
50	Out of the following which one affects the regression co-efficient: (a) Change of origin only (b) Change of scale only (c) Change of scale & origin both (d) Neither change of origin nor change of scale Ans : (b) [MTP April 24]
51	The regression equation x and y is $3x+2y=100$, the value of b_{xy} (a) $-2/3$ (b) $100/3$ (c) $3/2$ (d) $2/3$ Ans: (a) [MTP May 21]
52	The coefficient of correlation between x and y is 0.6. If x and y values are multiplied by -1, then coefficient of correlation will be (a) -0.6 (b) $1/0.6$ (c) 0.6 (d) 0.4 Ans: (c) [MTP May 21]
53	If x & y are two independent variables such that $x \sim B(n_1, P)$ and $y \sim B(n_2, p)$ then the parameter of $Z = x+y$ is (a) $(n_1+n_2), P$ (b) $(n_1-n_2), P$ (c) $(n_1+n_2), 2P$ (d) None of these Ans: (a) [MTP May 21]
54	For a bivariate data, the two lines of regression are $4x + 5y - 137 = 0$ and $2x + 9y - 179 = 0$, the values of $\bar{x}$ and $\bar{y}$ are: (a) 13, 17. (b) 16, 13 (c) 15, 11 (c) Non Ans:A [MTP Dec 23]
55	If the sum of squares of the rank difference in mathematics and physics

	marks of 10 students is 22, then the coefficient of rank correlation is : (a) 0.267 (b) 0.897 (c) 0.92 (d) None of these Ans : B [MTP Dec 23]
56	In a bivariate data $\sum X = 30$, $\sum Y = 40$, $\sum X^2 = 196$, $\sum XY = 850$ and $N = 10$. The regression coefficient of Y on X is : (a) -5.31 (b) -8.23 (c) 6.89 (d) None Ans : C [MTP Dec 23]
57	For n pairs of observations, the coefficient of concurrent deviation is calculated as $1/\sqrt{3}$. If there are six concurrent deviations, n = a. 11 b. 10 c. 9 d. 8 Ans : (a) [MTP Nov 22]
58	For a positive and perfectly correlated random variables, one of the regression coefficient is 1.4 and the standard deviation of X is 2, the variance of Y is (a) 2.37 (b) 6.76 (c) 6.56 (d) 3.16 Ans : (a) [MTP Nov 22]
59	If correlation co-efficient r between x and y is 0.5 then r between x and -y is (a) 1 (b) 0.5 (c) -0.5 (d) 0 Ans : (c) [MTP Nov 22]
60	AM of regression coefficient is: (a) Equal to r (b) Greater than or equal to r (c) half of r (d) None of these

	Ans : (b) [MTP Nov 22]
61	If the two regression lines are $3X = Y$ and $8Y = 6X$ then the value of correlation coefficient is: (a) -0.5 (b) 0.5 (c) 0.75 (d) -0.80 Ans : (b) [MTP Nov 22]
62	If the two lines of regression are $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$, then the regression line of y on x is: (a) $x + 2y - 5 = 0$ (b) $x + 2y = 0$ (c) $2x + 3y - 8 = 0$ (d) $2x + 3y = 0$ Ans : (a) [MTP Nov 22]
63	If $r = 0.5$, $\sum xy = 120$, $\sigma_y = 8$, $\sum x^2 = 90$, then value of n is equal to (a) 5 (b) 10 (c) 15 (d) 20 Ans : (b) [MTP May 24]
64	The coefficient of rank correlation of marks obtained by 10 students in English and Economics was found to be 0.5, it was later discovered that the difference in ranks in the two subjects obtained by one student was wrongly taken as 3 instead of 7. Find correct coefficient of rank correlation. a. 0.514 b. 0.364 c. 0.15 d. 0.260 Ans : (d) [MTP May 24]
65	The correlation between two variables x and y is found to be 0.4. What is the correlation between $2x$ and $(-y)$? a. 0.4 b. -0.4 c. 0.6 d. None of these Ans : (b) [MTP May 24]

CHAPTER 18 : INDEX NUMBERS

Exercise

1.	A series of numerical figures which show the relative position is called (a) index number (b) relative number (c) absolute number (d) none Ans : (a)
2.	Index number for the base period is always taken as (a) 200 (b) 50 (c) 1 (d) 100 Ans : (d)
3.	_____ play a very important part in the construction of index numbers. (a) weights (b) classes (c) estimations (d) none Ans : (a)
4.	_____ is particularly suitable for the construction of index numbers. (a) H.M. (b) A.M. (c) G.M. (d) None Ans : (c) [SM, MTP Nov 18]
5.	Index numbers show _____ changes rather than absolute amounts of change. (a) Relative (b) percentage (c) both (d) none Ans : (b)
6.	The _____ makes index numbers time-reversible. (a) A.M. (b) G.M. (c) H.M. (d) None Ans : (b)
7.	Price relative is equal to

	(a) $\frac{\text{Price in the given year} \times 100}{\text{price in the base year}}$ (b) $\frac{\text{Price in the given year} \times 100}{\text{price in the given year}}$ (c) price in the given year $\times 100$ (d) price in the base year $\times 100$ Ans : (a)
8.	Index number is equal to (a) sum of price relatives (b) average of the price relatives (c) product of price relative (d) none Ans : (b)
9.	The _____ of group indices gives the General Index (a) H.M. (b) G.M. (c) A.M. (d) None Ans : (c)
10.	Circular Test is one of the tests of (a) index numbers (b) hypothesis (c) both (d) none Ans : (a)
11.	_____ is an extension of time reversal test (a) Factor Reversal test (b) Circular test (c) both (d) none Ans : (b) [SM, MTP Nov 18, May 24]
12.	Weighted G.M. of relative formula satisfy _____ test (a) Time Reversal Test (b) Circular test (c) Factor Reversal Test (d) None Ans : (a) [SM, MTP may 19]
13.	Factor Reversal test is satisfied by (a) Fisher's Ideal Index (b) Laspeyres Index (c) Paasches Index

	(d) None Ans : (a) [SM, MTP Nov 20]
14.	Laspeyre's formula does not satisfy (a) Factor Reversal Test (b) Time Reversal Test (c) Circular Test (d) all the above Ans : (d) [SM, MTP Nov 21]
15.	A ratio or an average of ratios expressed as a percentage is called (a) a relative number (b) an absolute number (c) an index number (d) none Ans : (c)
16.	The value at the base time period serves as the standard point of comparison (a) FALSE (b) TRUE (c) both (d) none Ans : (b)
17.	An index time series is a list of _____ numbers for two or more periods of time (a) index (b) absolute (c) relative (d) none Ans : (a)
18.	Index numbers are often constructed from the (a) frequency (b) class (c) sample (d) none Ans : (C)
19.	_____ is a point of reference in comparing various data describing individual behaviour. (a) Sample (b) Base period (c) Estimation (d) None Ans : (b)
20.	The ratio of price of single commodity in a given period to its price in the preceding year price is called the

	(a) base period (b) price ratio (c) relative price (d) none Ans : (C)
21.	$\frac{\text{Sum of all commodity prices in the current year} \times 100}{\text{Sum of all commodity price in the base year}}$ (a) Relative Price Index (b) Simple Aggregative Price Index (c) both (d) none Ans : (b)
22.	Chain index is equal to $\frac{\text{link relative of current year} \times \text{chain index of the current year}}{100}$ (a) _____ $\frac{\text{link relative of previous year} \times \text{chain index of the current year}}{100}$ (b) _____ $\frac{\text{link relative of current year} \times \text{chain index of the previous year}}{100}$ (c) _____ $\frac{\text{link relative of previous year} \times \text{chain index of the previous year}}{100}$ (d) _____ Ans : (c) [SM, MTP May 19]
23.	P_{01} is the index for time (a) 1 on 0 (b) 0 on 1 (c) 1 on 1 (d) 0 on 0 Ans : (a)
24.	P_{10} is the index for time (a) 1 on 0 (b) 0 on 1 (c) 1 on 1 (d) 0 on 0 Ans : (b)
25.	When the product of price index and the quantity index is equal to the corresponding value index then the test that holds is (a) Unit Test (b) Time Reversal Test (c) Factor Reversal Test (d) none holds Ans : (c)
26.	The formula should be independent of the unit in which or for which price and quantities are quoted in

	(a) Unit Test (b) Time Reversal Test (c) Factor Reversal Test (d) None Ans : (a) [SM, MTP May 19]
27.	Laspeyre's method and Paasche's method do not satisfy (a) Unit Test (b) Time Reversal Test (c) Factor Reversal Test (d) b & c Ans : (d) [SM, MTP may 19, Nov 22]
28.	The purpose determines the type of index number to use (a) yes (b) no (c) may be (d) may not be Ans : (a)
29.	The index number is a special type of average (a) FALSE (b) TRUE (c) both (d) none Ans : (b)
30.	The choice of suitable base period is at best temporary solution (a) TRUE (b) FALSE (c) both (d) none Ans : (a)
31.	Fisher's Ideal Formula for calculating index numbers satisfies the _____ tests (a) Unit Test (b) Factor Reversal Test (c) both (d) none Ans : (c) [SM, MTP Dec 23]
32.	Fisher's Ideal Formula dose not satisfy _____ test (a) Unit Test (b) Circular Test (c) Time Reversal Test (d) None

	Ans : (b) [SM, MTP Nov 22]
33.	_____ satisfies circular test (a) G.M. of price relatives or the weighted aggregate with fixed weights (b) A.M. of price relatives or the weighted aggregate with fixed weights (c) H.M. of price relatives or the weighted aggregate with fixed weights (d) None Ans : (a) [SM, MTP Nov 21]
34.	Laspeyre's and Paasche's method _____ time reversal test (a) satisfy (b) do not satisfy (c) are (d) are not Ans : (b)
35.	There is no such thing as unweighted index numbers (a) FALSE (b) TRUE (c) both (d) none Ans : (a)
36.	Theoretically, G.M. is the best average in the construction of index numbers but in practice, mostly the A.M. is used (a) FALSE (b) TRUE (c) both (d) none Ans : (b)
37.	Laspeyre's or Paasche's or the Fisher's ideal index do not satisfy (a) Time Reversal Test (b) Unit Test (c) Circular Test (d) None Ans : (c)
38.	_____ is concerned with the measurement of price changes over a period of years, when it is desirable to shift the base (a) Unit Test

	(b) Circular Test (c) Time Reversal Test (d) None Ans : (b)
39.	The test of shifting the base is called (a) Unit Test (b) Time Reversal Test (c) Circular Test (d) None Ans : (c) [SM, MTP June 24, Aug 24]
40.	The formula for conversion to current value (a) Deflated value = Price Index of the current year/ previous value (b) Deflated value = Current value / Price Index of the current year (c) Deflated value = Price Index of the previous year/ previous value (d) Deflated value = Price Index of the previous year / previous value Ans : (b) [SM, MTP May 19]
41.	Shifted price Index = Original Price $\times 100$ / Price Index of the year on which it has to be shifted

	(a) TRUE (b) FALSE (c) both (d) none Ans : (a) [SM, MTP Dec 23]
42.	The number of test of Adequacy is (a) 2 (b) 5 (c) 3 (d) 4 Ans : (d) [SM, MTP Nov 22, April 24]
43.	We use price index numbers (a) To measure and compare prices (b) to measure prices (c) to compare prices (d) none Ans : (a)
44.	Simple aggregate of quantities is a type of (a) Quantity control (b) Quantity indices (c) both (d) none Ans : (b)

ADDITIONAL QUESTION BANK AND MTP RTP

1.	Each of the following statements is either True or False write your choice of the answer by writing T for True (a) Index Numbers are the signs and guideposts along the business highway that indicate to the businessman how he should drive or manage. (b) "For Construction index number, the best method on theoretical ground is not the best method from practical point of view". (c) Weighting index numbers makes them less representative. (d) Fisher's index number is not an ideal index number. Ans : (a)
2.	Each of the following statements is either True or False. Write your choice of the answer by writing F for false.

	(a) Geometric mean is the most appropriate average to be used for constructing an index number. (b) Weighted average of relatives and weighted aggregative methods render the same result. (c) "Fisher's Ideal Index Number is a compromise between two well known indices - not a right compromise, economically speaking". (d) "Like all statistical tools, index numbers must be used with great caution". Ans : (c)
3.	The best average for constructing an index numbers is (a) Arithmetic Mean (b) Harmonic Mean (c) Geometric Mean (d) None of these.

	Ans : (c) [SM, MTP Nov 19]
4.	The time reversal test is satisfied by (a) Fisher's index number. (b) Paasche's index number. (c) Laspeyre's index number. (d) None of these. Ans : (a)
5.	The factor reversal test is satisfied by (a) Simple aggregative index number. (b) Paasche's index number. (c) Laspeyre's index number. (d) Fisher's index Ans : (d)
6.	The circular test is satisfied by (a) Fisher's index number. (b) Paasche's index number. (c) Laspeyre's index number. (d) Simple GM price relative. Ans : (d) [SM, MTP Dec 23, July 24, April 24, Nov 21, May 23, Nov 23]
7.	Fisher's index number is based on (a) The Arithmetic mean of Laspeyre's and Paasche's index numbers. (b) The Median of Laspeyre's and Paasche's index numbers. (c) the Mode of Laspeyre's and Paasche's index numbers. (d) None of these. Ans : (d)
8.	Paasche index is based on (a) Base year quantities. (b) Current year quantities. (c) Average of current and base year. (d) None of these. Ans : (b)
9.	Fisher's ideal index number is (a) The Median of Laspeyre's and Paasche's index numbers (b) The Arithmetic Mean of Laspeyre's and Paasche's index numbers (c) The Geometric Mean of Laspeyre's and Paasche's index numbers (d) None of these. Ans : (c) [SM, MTP Jan 25, MTP May 19, Nov 18, May 20, July 24]
10.	Price-relative is expressed in term of

	(a) $P = P_N / P_O$ (b) $P = P_O / P_N$ (c) $P = P_n / P_o \times 100$ (d) $P = P_o / P_n \times 100$ Ans : (c)											
11.	Paasehe's index number is expressed in terms of : (a) $\Sigma P_n q_n / \Sigma P_o q_n$ (b) $\Sigma P_o q_o / \Sigma P_n q_n$ (c) $\Sigma P_n q_n / \Sigma P_o q_n$ (d) $\Sigma P_o q_o / \Sigma P_o q_o$ Ans : (c)											
12.	Time reversal Test is satisfied by following index number formula is (a) Laspeyre's Index number. (b) Simple Arithmetic Mean of price relative formula (c) Marshall-Edge worth formula. (d) None of these. Ans : (c)											
13.	Cost of Living Index number (C. L. I.) is expressed in terms of : (a) $\Sigma P_n q_o / \Sigma P_o q_o$ (b) $\Sigma P_n q_n / \Sigma P_o q_o$ (c) $\Sigma P_o q_n / \Sigma P_n q_n$ (d) None of these. Ans : (a)											
14.	If the ratio between Laspeyre's index number and Paasche's Index number is 28 : 27. Then the missing figure in the following table P is : <table><tr><th rowspan="2">Commodity</th><th colspan="2">Base Year</th></tr><tr><th>Price</th><th>Quantity</th></tr><tr><td>X</td><td>L</td><td>10</td></tr><tr><td>Y</td><td>L</td><td>5</td></tr></table> (a) 7 (b) 4 (c) 3 (d) 9 Ans : (b)	Commodity	Base Year		Price	Quantity	X	L	10	Y	L	5
Commodity	Base Year											
	Price	Quantity										
X	L	10										
Y	L	5										
15.	If the prices of all commodities in a place have increased 1.25 times in comparison to the base period, the index number of prices of that place now is (a) 125 (b) 150 (c) 225 (d) None of these. Ans : (c)											

16.	If the index number of prices at a place in 1994 is 250 with 1984 as base year, then the prices have increased on average by (a) 250% (b) 150% (c) 350% (d) None of these. Ans : (b)
17.	If the prices of all commodities in a place have decreased 35% over the base period prices, then the index number of prices of that place is now (a) 35 (b) 135 (c) 65 (d) None of these. Ans : (c)
18.	Link relative index number is expressed for period n is (a) $\frac{P_n}{P_{n+1}}$ (b) $\frac{P_{n+1}}{P_0}$ (c) $\frac{P_n}{P_{n-1}} \times 100$ (d) None of these. Ans : (c)
19.	Fisher's Ideal Index number is expressed in terms of : (a) $(P_{on})^F = \sqrt{\text{Laspeyre's Index} \times (\text{Paasche's Index})}$ (b) $(P_{on})^F = \text{Laspeyre's Index} \times \text{Paasche's Index}$ (c) $(P_{on})^F = \sqrt{\text{Marshall Edge worth Index} \times \text{Paasche's Index}}$ (d) None of these. Ans : (a)
20.	Factor Reversal Test According to Fisher is $P_{01} \times Q_{01} =$ (a) $\frac{\sum P_0 Q_0}{\sum P_n Q_n}$ (b) $\frac{\sum P_n Q_n}{\sum P_0 Q_0}$ (c) $\frac{\sum P_0 Q_0}{\sum P_n Q_n}$ (d) None of these. Ans : (b)
21.	Marshall-edge worth Index formula after interchange of p and q is expressed in terms of : (a) $\frac{\sum q_n(p_0 + p_n)}{\sum q_0(p_0 + p_n)}$ (b) $\frac{\sum P_n(q_0 + q_n)}{\sum q P_0(q_0 + q_n)}$ (c) $\frac{\sum P_0(q_0 + q_n)}{\sum P_n(p_0 + p_n)}$

	(d) None of these. Ans : (a)															
22.	If $\sum P_n q_n = 249$, $\sum P_0 q_0 = 150$, Paasche's Index Number = 150 and Drobiseh and Bowely's Index number = 145, then the Fisher's Ideal Index Number is (a) 75 (b) 60 (c) 145.97 (d) None of these. Ans : (d)															
23.	Consumer Price index number for the year 1957 was 313 with 1940 as the base year. The Average Monthly wages in 1957 of the workers into factory be Rs. 160/- their real wages is (a) Rs. 48.40 (b) Rs. 51.12 (c) Rs. 40.30 (d) None of these. Ans : (b)															
24.	If $\sum P_0 q_0 = 3500$, $\sum P_n q_0 = 3850$, then the Cost of living Index (C.L.I.) for 1950 w.r. to base 1960 is (a) 110 (b) 90 (c) 100 (d) None of these. Ans : (a)															
25.	From the following table by the method of relatives using Arithmetic mean the price Index number is <table border="1"><thead><tr><th>Commodity</th><th>Base Price</th><th>Current Price</th></tr></thead><tbody><tr><td>Wheat</td><td>5</td><td>7</td></tr><tr><td>Milk</td><td>8</td><td>10</td></tr><tr><td>Fish</td><td>25</td><td>32</td></tr><tr><td>Sugar</td><td>6</td><td>12</td></tr></tbody></table> (a) 140.35 (b) 148.25 (c) 140.75 (d) None of these. Ans : (b)	Commodity	Base Price	Current Price	Wheat	5	7	Milk	8	10	Fish	25	32	Sugar	6	12
Commodity	Base Price	Current Price														
Wheat	5	7														
Milk	8	10														
Fish	25	32														
Sugar	6	12														
26.	Which of the following statements is either True or False with your choice of the answer by writing F for False. (a) Base year quantities are taken as weights in Laspeyre's price Index number.															

	(b) Fisher's ideal index is equal to the Arithmetic mean of Laspeyre's and Paasche's index numbers. (c) Laspeyre's index number formula does not satisfy time reversal test. (d) None of these." Ans : (b)
27.	Which of the following statements is either True or False with your choice of the answer by writing F for False. (a) "Current year quantities are taken as weights in Paasche's price index number. (b) Edge worth Marshall's index number formula satisfies Time, Reversal Test. (c) The Arithmetic mean of Laspeyre's and Paasche's index numbers is called Bowely's index numbers. (d) None of these." Ans : (d)
28.	Which of the following statements is either True or False with your choice of the answer by writing F for False. (a) "Current year prices are taken as weights in Paasche's quantity index number. (b) Fisher's Ideal Index formula satisfies factor Reversal Test. (c) The sum of the quantities of the base period and current period is taken as weights in Laspeyre's index number. (d) None of these." Ans : (c)
29.	Which of the following statements is either True or False with your choice of the answer by writing F for False. (a) "Simple Aggregative and simple Geometric mean of price relatives formula satisfy circular Test. (b) Base year prices are taken as weights in Laspeyre's quantity index numbers. (c) Fisher's Ideal Index formula obeys time reversal and factor reversal tests. (d) None of these." Ans : (d)
30.	In 1980, the net monthly income of the employee was Rs. 800/- p. m. The consumer price index number was 160 in 1980. It rises

	to 200 in 1984. If he has to be rightly compensated. The additional D. A. to be paid to the employee is (a) Rs. 175/- (b) Rs. 185/- (c) Rs. 200/- (d) Rs. 125. Ans : (c)
31.	The simple Aggregative formula and weighted aggregative formula satisfy is (a) Factor Reversal Test (b) Circular Test (c) Unit Test (d) None of these. Ans : (b)
32.	Fisher's Ideal Index is the only formula which satisfies (a) Time Reversal Test (b) Circular Test (c) Factor Reversal Test (d) a & c. Ans : (d) [SM, MTP Jan 25, May 20]
33.	Neither Laspeyre's formula nor Paasche's formula obeys : (a) Time Reversal and factor Reversal Tests of index numbers. (b) Unit Test and circular Tests of index number. (c) Time Reversal and Unit Test of index number. (d) None of these. Ans : (a)
34.	Bowley's index number is 150. Fisher's index number is 149.95. Paasche's index number is (a) 146.13 (b) 154 (c) 148 (d) 156 Ans : (a)
35.	With the base year 1960 the C. L. I. in 1972 stood at 250. x was getting a monthly Salary of Rs. 500 in 1960 and Rs. 750 in 1972. In 1972 to maintain his standard of living in 1960 x has to receive as extra allowances of (a) Rs. 600/- (b) Rs. 500/- (c) Rs. 300/-

	(d) none of these. Ans : (b)																													
36.	From the following data base year :- <table><tr><th rowspan="2">Commodity</th><th colspan="2">Base Year</th><th colspan="2">Current Year</th></tr><tr><th>Price</th><th>Quantity</th><th>Price</th><th>Quantity</th></tr><tr><td>A</td><td>4</td><td>3</td><td>6</td><td>2</td></tr><tr><td>B</td><td>5</td><td>4</td><td>6</td><td>4</td></tr><tr><td>C</td><td>7</td><td>2</td><td>9</td><td>2</td></tr><tr><td>D</td><td>2</td><td>3</td><td>1</td><td>5</td></tr></table> Fisher's Ideal Index is (a) 117.3 (b) 115.43 (c) 118.35 (d) 116.48 Ans : (a)	Commodity	Base Year		Current Year		Price	Quantity	Price	Quantity	A	4	3	6	2	B	5	4	6	4	C	7	2	9	2	D	2	3	1	5
Commodity	Base Year		Current Year																											
	Price	Quantity	Price	Quantity																										
A	4	3	6	2																										
B	5	4	6	4																										
C	7	2	9	2																										
D	2	3	1	5																										
37.	Which statement is False? (a) The choice of suitable base period is at best a temporary solution. (b) The index number is a special type of average. (c) There is no such thing as unweighted index numbers. (d) Theoretically, geometric mean is the best average in the construction of index numbers but in practice, mostly the arithmetic mean is used. Ans : (c)																													
38.	Factor Reversal Test is expressed in terms of (a) $\frac{\sum P_1 Q_1}{\sum P_0 Q_0}$ (b) $\frac{\sum P_1 Q_1}{\sum P_0 Q_0} \times \frac{\sum P_1 Q_1}{\sum P_0 Q_1}$ (c) $\frac{\sum P_1 Q_1}{\sum Q_0 P_1}$ (d) $\frac{\sum Q_1 P_0}{\sum Q_0 P_0} \times \frac{\sum P_1 Q_1}{\sum Q_0 P_1}$ Ans : (a)																													
39.	Circular Test is satisfied by (a) Laspeyre's Index number. (b) Paasche's Index number (c) The simple geometric mean of price relatives and the weighted aggregative with fixed weights. (d) None of these. Ans : (c) [SM, RTP Jan 25]																													
40.	From the following data for the 5 groups combined <table><tr><th>Group</th><th>Weight</th><th>Index Number</th></tr><tr><td>Food</td><td>35</td><td>425</td></tr><tr><td>Cloth</td><td>15</td><td>235</td></tr></table>	Group	Weight	Index Number	Food	35	425	Cloth	15	235																				
Group	Weight	Index Number																												
Food	35	425																												
Cloth	15	235																												

(370)

	<table><tr><td>Power & Fuel</td><td>20</td><td>215</td></tr><tr><td>Rent & Rates</td><td>8</td><td>115</td></tr><tr><td>Miscellaneous</td><td>22</td><td>150</td></tr></table> The general index number is (a) 270 (b) 269.2 (c) 268.5 (d) 272.5 Ans : (b) [SM, MTP Nov 21]	Power & Fuel	20	215	Rent & Rates	8	115	Miscellaneous	22	150						
Power & Fuel	20	215														
Rent & Rates	8	115														
Miscellaneous	22	150														
41.	From the following data with 1966 as base year <table><tr><td>Commodity</td><td>Quantity Units</td><td>Value (Rs.)</td></tr><tr><td>A</td><td>100</td><td>500</td></tr><tr><td>B</td><td>80</td><td>320</td></tr><tr><td>C</td><td>60</td><td>150</td></tr><tr><td>D</td><td>30</td><td>360</td></tr></table> The price per unit of commodity A in 1966 is (a) Rs. 5 (b) Rs. 6 (c) Rs. 4 (d) Rs. 12 Ans : (a)	Commodity	Quantity Units	Value (Rs.)	A	100	500	B	80	320	C	60	150	D	30	360
Commodity	Quantity Units	Value (Rs.)														
A	100	500														
B	80	320														
C	60	150														
D	30	360														
42.	The index number in whole sale prices is 152 for August 1999 compared to August 1998. During the year there is net increase in prices of whole sale commodities to the extent of (a) 45% (b) 35% (c) 52% (d) 48% Ans : (c)															
43.	The value Index is expressed in terms of (a) $\frac{\Sigma P_1 Q_1}{\Sigma P_0 Q_0} \times 100$ (b) $\frac{\Sigma P_1 Q_1}{\Sigma P_0 Q_0}$ (c) $\frac{\Sigma P_0 Q_0}{\Sigma P_1 Q_1} \times 100$ (d) $\frac{\Sigma P_0 Q_1 \times \Sigma P_1 Q_1}{\Sigma P_0 Q_0 \times \Sigma P_1 Q_0}$ Ans : (a)															
44.	Purchasing Power of Money is (a) Reciprocal of price index number. (b) Equal to price index number. (c) Unequal to price index number (d) None of these. Ans : (a) [SM, MTP May 19, Dec 23, Nov 20, May 22, May 23, May 21]															
45.	90. Purchasing power of money is stated															

Lifelong Learners

	as price index? (a) Equal to (b) Unequal to (c) Reciprocal of (d) None of these Ans: (a) [MTP June 24, Aug 24]
46.	The price level of a country in a certain year has increased 25% over the base period. The index number is (a) 25 (b) 125 (c) 225 (d) 2500 Ans : (b)
47.	The index number of prices at a place in 1998 is 355 with 1991 as base. This means (a) There has been on the average a 255% increase in prices. (b) There has been on the average a 355% increase in price. (c) There has been on the average a 250% increase in price. (d) None of these. Ans : (a)
48.	The index number of prices at a place in 2008 is 355 with 2003 as base. This means (a) There has been on the average a 255% increase in prices (b) There has been on the average a 355% increase in price (c) There has been on the average a 250% increase in price. (d) None of these. Ans : (a) [MTP May 18, MTP June 24, Aug 24]
49.	If the price of all commodities in a place have increased 1.25 times in comparison to the base period prices, then the index number of prices for the place is now (a) 100 (b) 125 (c) 225 (d) None of the above. Ans : (c)
50.	The wholesale price index number or agricultural commodities in a given region at a given date is 280. The percentage increase in prices of agricultural commodities over the base year is :

	(a) 380 (b) 280 (c) 180 (d) 80 Ans : (c) [SM, MTP Jan 25, May 20, Nov 20(Similar)]															
51.	If now the prices of all the commodities in a place have been decreased by 35% over the base period prices, then the index number of prices for the place is now (index number of prices of base period = 100) (a) 100 (b) 135 (c) 65 (d) None of these. Ans : (c)															
52.	From the data given below <table><tr><th>Commodity</th><th>Price Relative</th><th>Weight</th></tr><tr><td>A</td><td>125</td><td>5</td></tr><tr><td>B</td><td>67</td><td>2</td></tr><tr><td>C</td><td>250</td><td>3</td></tr></table> Then the suitable index number is (a) 150.9 (b) 155.8 (c) 145.8 (d) None of these. Ans : (a)	Commodity	Price Relative	Weight	A	125	5	B	67	2	C	250	3			
Commodity	Price Relative	Weight														
A	125	5														
B	67	2														
C	250	3														
53.	Bowley's Index number is expressed in the form of : (a) $\frac{\text{Laspeyre's index} + \text{Paasche's index}}{2}$ (b) $\frac{\text{Laspeyre's index} \times \text{Paasche's index}}{2}$ (c) $\frac{\text{Laspeyre's index} - \text{Paasche's index}}{2}$ (d) None of these. Ans : (a)															
54.	From the following data <table><tr><th>Commodity</th><th>Base Price</th><th>Current Price</th></tr><tr><td>Rice</td><td>35</td><td>42</td></tr><tr><td>Wheat</td><td>30</td><td>35</td></tr><tr><td>Pulse</td><td>40</td><td>38</td></tr><tr><td>Fish</td><td>107</td><td>120</td></tr></table> The Simple aggregative Index is (a) 115.8 (b) 110.8 (c) 112.5 (d) 113.4 Ans : (b)	Commodity	Base Price	Current Price	Rice	35	42	Wheat	30	35	Pulse	40	38	Fish	107	120
Commodity	Base Price	Current Price														
Rice	35	42														
Wheat	30	35														
Pulse	40	38														
Fish	107	120														

55.	With regard to Laspeyre's and Paasche's price index numbers, it is maintained that "If the prices of all the goods change in the same ratio, the two indices will be equal for them the weighting system is irrelevant; or if the quantities of all the goods change in the same ratio, they will be equal, for them the two weighting systems are the same relatively". Then the above statements satisfy. (a) Laspeyre's Price index $\neq$ Paasche's Price Index. (b) Laspeyre's Price Index = Paasche's Price Index. (c) Laspeyre's Price Index may be equal Paasche's Price Index. (d) None of these. Ans : (b)
56.	The quantity Index number using Fisher's formula satisfies : (a) Unit Test (b) Factor Reversal Test. (c) Time Reversal Test. (d) All the three Ans : (d)
57.	For constructing consumer price Index is used : (a) Marshall Edge worth Method (b) Paasche's Method (c) Dorbish and Bowley's Method (d) Laspeyre's Method. Ans : (d)
58.	The cost of living Index (C.L.I.) is always : (a) Weighted index (b) Price Index (c) Quantity Index. (d) None of these. Ans : (a) [SM, MTP Jan 25, Nov 23]
59.	The Time Reversal Test is not satisfied to : (a) Fisher's ideal Index. (b) Marshall Edge worth Method (c) Laspeyre's and Paasche Method. (d) None of these. Ans : (c)
60.	Given below are the data on prices of some consumer goods and the weights attached to the various items. Compute price index

	number for the year 1985 (Base 1984 = 100)				
	Items	Unit	1984	1985	Weight
	Wheat	Kg.	0.50	0.75	2
	Milk	Litre	0.60	0.75	5
	Egg	Dozen	2.00	2.40	4
	Sugar	Kg.	1.80	2.10	8
	Shoes	Pair	8.00	10.00	1
	Then weighted average of price Relative Index is ;				
	(a) 125.43				
	(b) 123.3				
	(c) 124.53				
	(d) 124.52				
	Ans : (b)				
61.	The Factor Reversal Test is as represented symbolically is :				
	(a) $P_{01} \times Q_{01} = \frac{\sum P_1 Q_1}{\sum P_0 Q_0}$				
	(b) $I_{01} \times I_{10}$				
	(c) $\frac{\sum P_0 Q_0}{\sum P_1 Q_1}$				
	(d) $\sqrt{\frac{\sum P_1 Q_1}{\sum P_0 Q_0} \times \frac{\sum P_0 Q_1}{\sum P_1 Q_0}}$				
	Ans : (a)				
62.	If the 1970 index with base 1965 is 200 and 1965 index with base 1960 is 150, the index 1970 on base 1960 will be :				
	(a) 700				
	(b) 300				
	(c) 500				
	(d) 600				
	Ans : (b)				
63.	Circular Test is not met by :				
	(a) The simple Geometric mean of price relatives.				
	(b) The weighted aggregative with fixed weights.				
	(c) Laspeyre's or Paasche's or the fisher's Ideal index.				
	(d) None of these.				
	Ans : (c)				
64.	From the following data				
	Commodity	Base Year		Current Year	
		Price	Quantity	Price	Quantity
	A	4	3	6	2
	B	5	4	6	4
	C	7	2	9	2
	D	2	3	1	5
	Then the value ratio is :				

	(a) 59/52 (b) 49/47 (c) 41/53 (d) 47/53 Ans : (a)																		
65.	The value index is equal to : (a) The total sum of the values of a given year multiplied by the sum of the values of the base year. (b) The total sum of the values of a given year Divided by the sum of the values of the base year. (c) The total sum of the values of a given year plus by the sum of the values of the base year. (d) None of these. Ans : (b)																		
66.	Time Reversal Test is represented symbolically by : (a) $P_{01} \times P_{10}$ (b) $P_{01} \times P_{10} = 1$ (c) $P_{01} \times P_{10} \neq 1$ (d) None of these. Ans : (b)																		
67.	In 1996 the average price of a commodity was 20% more than in 1995 but 20% less than in 1994; and more over it was 50% more than in 1997 to price relatives using 1995 as base (1995 price relative 100). Reduce the data is : (a) 150, 100, 120, 80 for (1994-97) (b) 135, 100, 125, 87 for (1994-97) (c) 140, 100, 120, 80 for (1994-97) (d) None of these. Ans : (a)																		
68.	From the following data <table><tr><th>Commodity</th><th>Base Price 1922 Price</th><th>Current Price 1934 Price</th></tr><tr><td>A</td><td>6</td><td>10</td></tr><tr><td>B</td><td>2</td><td>2</td></tr><tr><td>C</td><td>4</td><td>6</td></tr><tr><td>D</td><td>11</td><td>12</td></tr><tr><td>E</td><td>8</td><td>12</td></tr></table> The price index number for the year 1934 is : (a) 140 (b) 145 (c) 147	Commodity	Base Price 1922 Price	Current Price 1934 Price	A	6	10	B	2	2	C	4	6	D	11	12	E	8	12
Commodity	Base Price 1922 Price	Current Price 1934 Price																	
A	6	10																	
B	2	2																	
C	4	6																	
D	11	12																	
E	8	12																	

	(d) None of these. Ans : (d)																		
69.	From the following data <table><tr><th>Commodities</th><th>Base Price 1964</th><th>Current Price 1968</th></tr><tr><td>Rice</td><td>36</td><td>54</td></tr><tr><td>Pulse</td><td>30</td><td>50</td></tr><tr><td>Fish</td><td>130</td><td>155</td></tr><tr><td>Potato</td><td>40</td><td>35</td></tr><tr><td>Oil</td><td>110</td><td>110</td></tr></table> The index number by unweighted methods: (a) 116.8 (b) 117.25 (c) 115.35 (d) 119.37 Ans : (a)	Commodities	Base Price 1964	Current Price 1968	Rice	36	54	Pulse	30	50	Fish	130	155	Potato	40	35	Oil	110	110
Commodities	Base Price 1964	Current Price 1968																	
Rice	36	54																	
Pulse	30	50																	
Fish	130	155																	
Potato	40	35																	
Oil	110	110																	
70.	The Bowley's Price index number is represented in terms of : (a) A.M. of Laspeyre's and Paasche's Price index number. (b) G.M. of Laspeyre's and Paasche's Price index number (c) A.M. of Laspeyre's and Walsh's price index number (d) None of these. Ans : (a)																		
71.	Fisher's price index number equal is : (a) G.M. of Kelly's price index number and Paasche's price index number. (b) G.M. of Laspeyre's and Paasche's Price index number (c) G.M. of Bowley's price index number and Paasche's price index number (d) None of these. Ans : (b) [SM, MTP May 21, Nov 23]																		
72.	The price index number using simple G.M. of the n relatives is given by : (a) $\log I_{on} = 2 - \frac{1}{n} \sum \log \frac{P_n}{P_o}$ (b) $\log I_{on} = 2 + \frac{1}{n} \sum \log \frac{P_n}{P_o}$ (c) $\log I_{on} = \frac{1}{n} \sum \log \frac{P_n}{P_o}$ (d) None of these. Ans : (b)																		
73.	The price of a number of commodities are given below in the current year 1975 and base year 1970. <table><tr><th>Commodities</th><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th><th>F</th></tr><tr><td>Base Price</td><td>45</td><td>60</td><td>20</td><td>50</td><td>85</td><td>120</td></tr></table>	Commodities	A	B	C	D	E	F	Base Price	45	60	20	50	85	120				
Commodities	A	B	C	D	E	F													
Base Price	45	60	20	50	85	120													

	Current Price	55	70	30	75	90	130
	For 1975 with base 1970 by the Method of price relatives using Geometrical mean, the price index is :						
	(a) 125.3						
	(b) 124.3						
	(c) 128.8						
	(d) None of these.						
	Ans : (b)						
74.	From the following data						
	Group	Group Index	Weight				
	A	120	6				
	B	132	3				
	C	98	4				
	D	115	2				
	E	108	1				
	F	95	4				
	The general index I is given by :						
	(a) 111.3						
	(b) 113.45						
	(c) 117.25						
	(d) 114.75						
	Ans : (a)						
	[SM, MTP Dec 23]						
75.	The price of a commodity increases from Rs. 5 per unit in 1990 to Rs. 7.50 per unit in 1995 and the quantity consumed decreases from 120 units in 1990 to 90 units in 1995. The price and quantity in 1995 are 150% and 75% respectively of the corresponding price and quantity in 1990. Therefore, the product of the price ratio and quantity ratio is :						
	(a) 1.8						
	(b) 1.125						
	(c) 1.75						
	(d) None of these.						
	Ans : (b)						
76.	Test whether the index number due to Walsh given by : $I = \frac{\sum P_1 \sqrt{Q_0 Q_1}}{\sum P_0 \sqrt{Q_0 Q_1}} \times 100$ Satisfies is :-						
	(a) Time reversal Test						
	(b) Factor reversal Test						
	(c) Circular Test						
	(d) None of these.						
	Ans : (a)						
77.	From the following data						
	Group	Wei	Index	Number			

	ght	Base : 1952-53=100
Food	50	241
Clothing	2	21
Fuel and light	3	204
Rent	16	256
Miscellaneous	29	179
The cost of living index numbers is :		
(a) 224.5		
(b) 223.91		
(c) 225.32		
(d) None of these.		
Ans : (d)		
78.	Consumer price index number goes up from 110 to 200 and the Salary of a worker is also raised from Rs. 325 to Rs. 500. Therefore, in real terms, to maintain his previous standard of living he should get an additional amount of :	
(a) Rs. 85		
(b) Rs. 90.91		
(c) Rs. 98.25		
(d) None of these.		
Ans : (b)		
79.	The prices of a commodity in the year 1975 and 1980 were 25 and 30 respectively taking 1980 as base year the price relative is :	
(a) 109.78		
(b) 110.25		
(c) 113.25		
(d) None of these.		
Ans : (d)		
[SM, MTP May 21(Similar)]		
80.	The average price of certain commodities in 1980 was Rs. 60 and the average price of the same commodities in 1982 was Rs. 120. Therefore, the increase in 1982 on the basis of 1980 was 100%. The decrease in 1980 with 1982 as base is: using 1982, comment on the above statement is :	
(a) The price in 1980 decreases by 60% using 1982 as base		
(b) The price in 1980 decreases by 50% using 1982 as base		
(c) The price in 1980 decreases by 90% using 1982 as base		
(d) None of these.		

	Ans : (b)																													
81.	Cost of Living Index (C.L.I.) numbers are also used to find real wages by the process of (a) Deflating of Index number (b) Splicing of Index number (c) Base shifting (d) None of these. Ans : (a)																													
82.	From the following data <table><tr><th rowspan="2">Commodities</th><th colspan="2">1992 Base</th><th colspan="2">1993 Current Year</th></tr><tr><th>Price</th><th>Quantity</th><th>Price</th><th>Quantity</th></tr><tr><td>A</td><td>3</td><td>18</td><td>4</td><td>15</td></tr><tr><td>B</td><td>5</td><td>6</td><td>5</td><td>9</td></tr><tr><td>C</td><td>4</td><td>20</td><td>6</td><td>26</td></tr><tr><td>D</td><td>1</td><td>14</td><td>3</td><td>15</td></tr></table> The Passche price Index number is : (a) 146.41 (b) 148.25 (c) 144.25 (d) None of these. Ans : (a)	Commodities	1992 Base		1993 Current Year		Price	Quantity	Price	Quantity	A	3	18	4	15	B	5	6	5	9	C	4	20	6	26	D	1	14	3	15
Commodities	1992 Base		1993 Current Year																											
	Price	Quantity	Price	Quantity																										
A	3	18	4	15																										
B	5	6	5	9																										
C	4	20	6	26																										
D	1	14	3	15																										
83.	From the following data <table><tr><th rowspan="2">Commodity</th><th colspan="2">Base Year</th><th colspan="2">Current Year</th></tr><tr><th>Price</th><th>Quantity</th><th>Price</th><th>Quantity</th></tr><tr><td>A</td><td>7</td><td>17</td><td>13</td><td>25</td></tr><tr><td>B</td><td>6</td><td>23</td><td>7</td><td>25</td></tr><tr><td>C</td><td>11</td><td>14</td><td>13</td><td>15</td></tr><tr><td>D</td><td>4</td><td>10</td><td>8</td><td>8</td></tr></table> The Marshall Edge Worth Index number is : (a) 148.25 (b) 144.19 (c) 147.25 (d) 143.78 Ans : (b)	Commodity	Base Year		Current Year		Price	Quantity	Price	Quantity	A	7	17	13	25	B	6	23	7	25	C	11	14	13	15	D	4	10	8	8
Commodity	Base Year		Current Year																											
	Price	Quantity	Price	Quantity																										
A	7	17	13	25																										
B	6	23	7	25																										
C	11	14	13	15																										
D	4	10	8	8																										
84.	The circular Test is an extension of (a) The time reversal Test (b) The factor reversal Test (c) The unit Test (d) None of these. Ans : (a) [SM, MTP Nov 18, Nov 21]																													
85.	"Circular test, an index constructed for the year 'x' on the base year 'y' and for the year 'y' on the base year 'z' should yield the same result as an index constructed for 'x' on base																													

	year 'z' i.e. $I_{01} \times I_{12} \times I_{20}$ equal is :" (a) 3 (b) 2 (c) 1 (d) None of these. Ans : (c)												
86.	In 1976 the average price of a commodity was 20% more than that in 1975 but 20% less than that in 1974 and more over it was 50% more than that in 1977. The price relatives using 1975 as base year (1975 price relative = 100) then the reduce data is : (a) 8,.75 (b) 150,80 (c) 75,125 (d) None of these. Ans : (b)												
87.	Time Reversal Test is represented by symbolically is : (a) $P_{01} \times Q_{01} = 1$ (b) $I_{01} \times I_{10} = 1$ (c) $I_{01} \times I_{12} \times I_{23} \times \dots I_{(n-1)n} \times I_{n0} = 1$ (d) None of these. Ans : (b)												
88.	The prices of a commodity in the years 1975 and 1980 were 25 and 30 respectively, taking 1975 as base year the price relative is: (a) 120 (b) 135 (c) 122 (d) None of these. Ans : (a)												
89.	From the following data <table border="1"> <thead> <tr> <th>Year</th><th>Link Index</th></tr> </thead> <tbody> <tr> <td>1992</td><td>100</td></tr> <tr> <td>1993</td><td>103</td></tr> <tr> <td>1995</td><td>105</td></tr> <tr> <td>1996</td><td>112</td></tr> <tr> <td>1997</td><td>108</td></tr> </tbody> </table> (Base 1992 = 100) for the years 1993–97. The construction of chain index is : (a) 103, 100.94, 107, 118.72 (b) 103, 108.15, 121.3, 130.82 (c) 107, 100.25, 104, 118.72 (d) None of these. Ans : (b)	Year	Link Index	1992	100	1993	103	1995	105	1996	112	1997	108
Year	Link Index												
1992	100												
1993	103												
1995	105												
1996	112												
1997	108												

90.	During a certain period the cost of living index number goes up from 110 to 200 and the salary of a worker is also raised from Rs. 330 to Rs. 500. The worker does not get really gain. Then the real wages decreased by : (a) Rs. 45.45 (b) Rs. 43.25 (c) Rs. 100 (d) None of these. Ans : (c)
91.	Net monthly salary of an employee was Rs. 3000 in 1980. The consumer price index number in 1985 is 250 with 1980 as base year. If the has to be rightly compensated then, 7th dearness allowances to be paid to the employee is : (a) Rs. 4,800.00 (b) Rs. 4,700.00 (c) Rs. 4,500.0 (d) None of these. Ans : (c) [SM, MTP Nov 21]
92.	Net Monthly income of an employee was Rs. 800 in 1980. The consumer price Index number was 160 in 1980. It is rises to 200 in 1984. If he has to be rightly compensated. The additional dearness allowance to be paid to the employee is : (a) Rs. 240 (b) Rs. 275 (c) Rs. 250 (d) None of these. Ans : (d)
93.	When the cost of Tobacco was increased by 50%, a certain hardened smoker, who maintained his formal scale of consumption, said that the rise had increased his cost of living by 5%. Before the change in price, the percentage of his cost of living was due to buying Tobacco is (a) 15% (b) 8% (c) 10% (d) None of these. Ans : (c)
94.	If the price index for the year, say 1960 be 110.3 and the price index for the year, say 1950 be 98.4, then the purchasing power of money (Rupees) of 1950 in 1960 is

	(a) Rs. 1.12 (b) Rs. 1.25 (c) Rs. 1.37 (d) None of these. Ans : (a)
95.	If $\sum P_0 Q_0 = 1360$, $\sum P_n Q_0 = 1900$, $\sum P_0 Q_n = 1344$, $\sum P_n Q_n = 1880$ then the Laspeyre's Index number is (a) 0.71 (b) 1.39 (c) 1.75 (d) None of these. Ans : (b) [SM, MTP June 24, Aug 24, Nov 23]
96.	If $\sum P_0 Q_0 = 1360$, $\sum P_n Q_0 = 1900$, $\sum P_n Q_n = 1880$ then the Laspeyre's Index number is (a) 71 (b) 139.71 (c) 175 (d) None of these. Ans : (b) [MTP Nov 21]
97.	The consumer price Index for April 1985 was 125. The food price index was 120 and other items index was 135. The percentage of the total weight index given to food is (a) 66.67 (b) 68.28 (c) 90.25 (d) None of these. Ans : (a) [SM, MTP Nov 21]
98.	The total value of retained imports into India in 1960 was Rs. 71.5 million per month. The corresponding total for 1967 was Rs. 87.6 million per month. The index of volume of retained imports in 1967 composed with 1960 (= 100) was 62.0. The price index for retained inputs for 1967 our 1960 as base is (a) 198.61 (b) 197.61 (c) 198.25 (d) None of these. Ans : (b)
99.	During the certain period the C.L.I. goes up from 110 to 200 and the Salary of a worker is also raised from 330 to 500, then the real terms is (a) Loss by Rs. 50 (b) Loss by 75

	(c) Loss by Rs. 90 (d) None of these. Ans : (a)																								
	[SM, MTP Nov 20]																								
100.	From the following data <table><tr><th>Commodities</th><th>Q_0</th><th>P_0</th><th>Q_1</th><th>P_1</th></tr><tr><td>A</td><td>2</td><td>2</td><td>6</td><td>18</td></tr><tr><td>B</td><td>5</td><td>2</td><td>2</td><td>2</td></tr><tr><td>C</td><td>7</td><td>7</td><td>4</td><td>24</td></tr></table> Then the fisher's quantity index number is (a) 87.34 (b) 85.24 (c) 87.25 (d) 78.93 Ans : (d)	Commodities	Q_0	P_0	Q_1	P_1	A	2	2	6	18	B	5	2	2	2	C	7	7	4	24				
Commodities	Q_0	P_0	Q_1	P_1																					
A	2	2	6	18																					
B	5	2	2	2																					
C	7	7	4	24																					
101.	From the following data <table><tr><th>Commodities</th><th>Base Year</th><th>Current Year</th></tr><tr><td>A</td><td>25</td><td>55</td></tr><tr><td>V</td><td>30</td><td>45</td></tr></table> The index numbers from G.M Method is (a) 181.66 (b) 185.25 (c) 181.75 (d) None of these. Ans : (a)	Commodities	Base Year	Current Year	A	25	55	V	30	45															
Commodities	Base Year	Current Year																							
A	25	55																							
V	30	45																							
102.	Using the following data <table><tr><th rowspan="2">Commodity</th><th colspan="2">Base Year</th><th colspan="2">Current Year</th></tr><tr><th>Price</th><th>Quantity</th><th>Price</th><th>Quantity</th></tr><tr><td>X</td><td>4</td><td>10</td><td>6</td><td>15</td></tr><tr><td>Y</td><td>6</td><td>15</td><td>4</td><td>20</td></tr><tr><td>Z</td><td>8</td><td>5</td><td>10</td><td>4</td></tr></table> The Paasche's formula for index is : (a) 125.38 (b) 147.25 (c) 129.8 (d) 99.06 Ans : (d)	Commodity	Base Year		Current Year		Price	Quantity	Price	Quantity	X	4	10	6	15	Y	6	15	4	20	Z	8	5	10	4
Commodity	Base Year		Current Year																						
	Price	Quantity	Price	Quantity																					
X	4	10	6	15																					
Y	6	15	4	20																					
Z	8	5	10	4																					
103.	Group index number is represented by (a) Price Relative for the year/Price Relative for the previous year $\times 100$ (b) $\frac{\sum(\text{PriceRelative} \times w)}{\sum w}$ (c) $\frac{\sum(\text{PriceRelative} \times w)}{\sum w \times 100}$ (d) None of these. Ans : (b)																								
104.	The Paasches and Fishers index numbers are																								

	169 and 156 respectively, then Laspyre's Index number is: (a) 144 (b) 152 (c) 148 (d) 151.5 Ans : A [MTP Jan 25, Nov 19, May 20]
105.	The _____ is satisfied when $P_{ab} \times P_{bc} \times P_{ca} = 1$ (a) Time reversal test (b) Factor reversal test (c) Circular Test (d) none of these Ans : (c) [MTP May 18, June 24, Aug 24]
106.	63. The number of tests of Adequacy (a) 2 (b) 3 (c) 4 (d) 5 Ans : (c), [MTP May 18, June 24, Aug 24, Nov 20, May 22]
107.	Which of the options does not contain the proper use of Index numbers (a) Helpful in policy determination (b) Useful in Forecasting (c) Equally useful in all condition for different purpose (d) Helpful in comparison Ans : (c) [MTP Nov 18]
108.	While construction of Index numbers which of the following has to be considered as point of the following has to be considered as point of reference in company various data describing individual behaviour (a) Selection of weights (b) Base Period (c) Selection of Formulae (d) Choice of variables Ans : (b) [MTP Nov 18]
109.	Fishers Ideal Formula satisfaction (1) Unit Test (2) Circular Test (3) Factor Reversal Test (4) Time Reversal Test

	(a) 1 and 2 (b) 3 and 4 (c) 1 and 3 (d) 1,2 and 3 Ans : (b) [MTP Nov 18, May 22]
110.	In price index, when a new commodity is required to be added, which of the following index is used? (a) Shifted price index (b) Splicing price index (c) Deflating price index (d) Value price index Ans : A [MTP June 23]
111.	If Fisher's index = 150 and Paasche's Index = 144, then Laspeyre's index is _____ (a) 147 (b) 156.25 (c) 104.17 (d) 138 Ans : B [MTP June 23, April 24]
112.	Which index measures the change from month to month in the cost of a representative basket of goods and services of the type bought by a typical household? (a) Retail Price Index (b) Laspeyre's Index (c) Fisher's index (d) Paasche's Index Ans : A [MTP June 23]
113.	From the following data constructed the index number by Laspeyre's method $\Sigma P_1Q_1=100, \Sigma P_0Q_1=86, \Sigma P_0Q_0=83, \Sigma P_1Q_0=106$ (a) 130.36 (b) 131.51 (c) 130.59 (d) 127.71 Ans : D [MTP June 23]
114.	Fisher's index number is called as ideal index number because is in satisfies. (a) Factor reversal test (b) Time reversal test (c) Both factor and time reversal test (d) Circular test Ans : C

	[MTP June 23]
115.	Which of the following statement is true ? (a) Paasche's index number is based on base year quantity (b) Fisher's index satisfies the circular test (c) Arithmetic mean is the most appropriate average for constructing the index number (d) Splicing means constructing one continuous series from two different indices on the basis of common base. Ans : D [MTP dec 23]
116.	Monthly salary of an employee was ₹ 10,000 in the year 2000 and it was increased to ₹ 20,000 in the year 2013 while the consumer price index number is 240 in year 2013 with the base year 2000, what should be his salary in comparison of consumer price index in the year 2013 ? (a) 2,000 (b) 16,000 (c) 24,000 (d) None of these Ans : A [MTP dec 23, April 24]
117.	In the year 2010 the monthly salary was ₹ 24,000. The consumer price index number was 140 in the year 2010 which rises to 224 in the year 2016. If he has to be rightly compensated what additional monthly salary to be paid to him (a) ₹ 14,400 (b) ₹ 38,400 (c) ₹ 7,200 (d) None of these Ans : C [MTP dec 23]
118.	Fisher's method for construction of Index Numbers uses (a) Geometric Mean (b) Harmonic Mean. (c) Median (d) HM Ans : (a) [MTP May 24]
119.	The consumer price index in 1990 increases by 80- per cent as compared to the base 1980. A person in 1980 getting Rs. 60,000 per annum should now get (a) Rs. 1,08,000 per annum

	(b) Rs. 82,000 per annum (c) Rs. 64,000 per annum (d) None of these Ans : (a) [MTP May 24]
120.	If the prices of all commodities in the base year are twice the values of the respective commodities in the current year, then the Fisher's ideal index number is equal to: (a) 200 (b) 50 (c) 400 (d) 25 Ans : (b) [MTP July 24]
121.	If Laspyres Index number is 250 and Paasches Index number is 160, then Fishers Index number is: (a) 200 (b) 400 (c) 250 (d) 196 Ans : (a) [MTP July 24, Nov 21, Nov 23]
122.	$\sum P_0 Q_0 = 1360$, $\sum P_n Q_0 = 2000$, then the Laspyres Index number is: (a) 71 (b) 147.50 (c) 175 (d) none of these Ans : (b) [MTP July 24]
123.	In the data group Bowley's and Laspeyre's index number is as follows. Bowley's index number = 150, Laspeyre's index number = 180 then Paasche's index number is: (a) 120 (b) 30 (c) 165 (d) None of these Ans : (a) [MTP April 24, Nov 22]
124.	For year 2015, price index was 267% with base year 2005. The percentage increase in price index over base year 2005 is: (a) 2.67 (b) 67% (c) 1.67 (d) None of these

	Ans : (c) [MTP May 21]
125.	Consumer price Index number from a year 2004 to 2010 changed 100 to 200. The salary of an employee has changed from Rs.3,000 to (a) Rs.3,500 (b) Rs.2,500 (c) Rs.6,000 (d) Rs.3,500 Ans : (c) [MTP Nov 18]
126.	Unit test is satisfied by by (a) Fischers Index number (b) Laspyers Index number (c) Simple GM of price relatives (d) Bowleys Index number Ans : (c) [MTP Nov 18]
127.	If the price of a commodity in a place have decreased by 30% over the based period places, then the index number of that place is (a) 30 (b) 60 (c) 70 (d) 80 Ans : (c) [MTP Nov 21]
128.	Which is called an ideal index number (a) Laspyres Index number (b) Pasches Index number (c) Fishers Index number (d) Marshall- Edgeworth Index number Ans : (c) [MTP Nov 21]
129.	The weight average of price relatives of commodities when the weight is equal to the value of commodities in base year yields index number (a) Fisher's Ideal (b) Laspyres (c) Paasches (d) Marshall-Edgeworth Ans.(b) [MTP May 22]
130.	Index numbers are not helpful in (a) Framining Economic Policies (b) Revealing Trend (c) Forecasting

	(d) Identifying errors Ans.(d) [MTP May 22]																								
131.	Find the Paasche's Index number for prices from the following <table><tr><th rowspan="2">Commodity</th><th colspan="2">Base year</th><th colspan="2">Current year</th></tr><tr><th>Price</th><th>Commodity</th><th>Price</th><th>Commodity</th></tr><tr><td>A</td><td>1</td><td>6</td><td>3</td><td>5</td></tr><tr><td>B</td><td>3</td><td>5</td><td>8</td><td>5</td></tr><tr><td>C</td><td>4</td><td>8</td><td>10</td><td>6</td></tr></table> (a) 261.36 (b) 265.48 (c) 274.32 (d) 282 Ans.(a) [MTP May 22]	Commodity	Base year		Current year		Price	Commodity	Price	Commodity	A	1	6	3	5	B	3	5	8	5	C	4	8	10	6
Commodity	Base year		Current year																						
	Price	Commodity	Price	Commodity																					
A	1	6	3	5																					
B	3	5	8	5																					
C	4	8	10	6																					
132.	The index number for the year 2012 taking 2011 as the base year from the data given below by using simple average of price relative method is <table><tr><th>Commodity</th><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th></tr><tr><td>Price in 2011</td><td>115</td><td>108</td><td>95</td><td>80</td><td>90</td></tr><tr><td>Price in 2012</td><td>125</td><td>117</td><td>108</td><td>95</td><td>95</td></tr></table> (a) 112 (b) 117 (c) 120 (d) 111 Ans.(d) [MTP May 22]	Commodity	A	B	C	D	E	Price in 2011	115	108	95	80	90	Price in 2012	125	117	108	95	95						
Commodity	A	B	C	D	E																				
Price in 2011	115	108	95	80	90																				
Price in 2012	125	117	108	95	95																				
133.	Suppose a business executive was earning Rs. 2,050 in the base period. What should be his salary in the current period if his standard of living is to remain the same? Given $\sum W = 25$ and $\sum IW = 3544$: (a) Rs. 2096 (b) Rs. 2906 (c) Rs. 2106 (d) Rs. 2306 Ans.(b) [MTP May 22]																								
134.	The cost-of-living index number in year 2015 and 2018 were 97.5 and 115 respectively. The salary of CA Jitendra in 2015 was 195000. How much additional salary was required for him in 2018 to maintain the same standard of living as in 2015? (a) 30000 (b) 40000 (c) 35000																								

	(d) 45000 Ans : (c) [MTP May 22, May 21(Similar)]																													
135.	The simple index number for the current year using simple aggressive method for the following data <table><tr><th>Commodity base</th><th>Base year price (P_0)</th><th>Current year price (P_1)</th></tr><tr><td>Wheat</td><td>80</td><td>100</td></tr><tr><td>Rich</td><td>100</td><td>150</td></tr><tr><td>Gram</td><td>120</td><td>250</td></tr><tr><td>Pulses</td><td>200</td><td>300</td></tr></table> (a) 200 (b) 150 (c) 240 (d) 160 Ans : (d)	Commodity base	Base year price (P_0)	Current year price (P_1)	Wheat	80	100	Rich	100	150	Gram	120	250	Pulses	200	300														
Commodity base	Base year price (P_0)	Current year price (P_1)																												
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Rich	100	150																												
Gram	120	250																												
Pulses	200	300																												
136.	Find the Paasche's Index number for prices from the following <table><tr><th rowspan="2">Commodity</th><th colspan="2">Base year</th><th colspan="2">Current year</th></tr><tr><th>Price</th><th>Commodity</th><th>Price</th><th>Commodity</th></tr><tr><td>A</td><td>5</td><td>25</td><td>6</td><td>30</td></tr><tr><td>B</td><td>3</td><td>8</td><td>4</td><td>10</td></tr><tr><td>C</td><td>2</td><td>10</td><td>3</td><td>8</td></tr><tr><td>D</td><td>10</td><td>4</td><td>3</td><td>45</td></tr></table> (a) 151.21 (b) 165.28 (c) 157.26 (d) 160.21 Ans : (c) [MTP Nov 22]	Commodity	Base year		Current year		Price	Commodity	Price	Commodity	A	5	25	6	30	B	3	8	4	10	C	2	10	3	8	D	10	4	3	45
Commodity	Base year		Current year																											
	Price	Commodity	Price	Commodity																										
A	5	25	6	30																										
B	3	8	4	10																										
C	2	10	3	8																										
D	10	4	3	45																										
137.	Laspyres index number is aweighted aggregate method by taking as weights. (a) Quanatity consumed in the base year (b) Quanatity consumed in the current year (c) Value of items consumed in base year (d) Vlaue of items consumed in the current year Ans : (a) [MTP Nov 22]																													
138.	Fisher's method of calculating the index number is based on the . (a) Geometric mean (b) Arithmetic mean (c) Harmonic mean																													

	(d) None of the above Answer(a) [MTP May 23]
139.	Which test should be considered necessarily to verify the consistency while we select an appropriate index formula (a) Circular test (b) Time reversal test (c) Factor reversal test (d) Both b and c Answer(d) [MTP May 23]
140.	If Laspeyres index is A and Fisher's index is B. Find the value of Passche's index (a) B^2 / A (b) A^2 / B (c) $A / 2B$ (d) $2B / A$ Answer(a) [MTP May 23]
141.	Consumer price index is commonly known as (a) Chain Based index (b) Ideal index (c) Wholesale price index (d) Cost of living index. Ans : (d) [MTP April 24]
142.	If an increase of 10% in prices. The rise in wages is 20% then the real wage has increased by An index time series is a list of numbers for two or more periods of time. (a) 20% (b) 10 % (c) Less than 10 % (d) More than 20% Ans: (a) [MTP May 21]
143.	Consumer price index number goes up from 110 to 200 and the Salary of a worker is also raised from ` 33,000 to ` 50,000. Therefore, in real terms, to maintain his previous standard of living he should get an additional amount of: - (a) ` 8500 (b) ` 10,000 (c) ` 9825 (d) None of these. Ans : B [MTP Dec 23]

144.	In 2017 the average price of a commodity was 20% more than in 2016 but 20% less than in 2015; and more over it was 50% more than in 2018 to price relatives using 2016 as base (2016 price relative 100) Reduce the data is: (a) 140, 100, 120, 80 for (2015-18) (b) 150, 100, 120, 80 for (2015-18) (c) 135, 100, 125, 87 for (2015-18) (d) None of these. Ans : B [MTP Dec 23]
145.	If the 2018 index with base 2015 is 250 and 2015 index with base 2012 is 150, the index 2018 on base 2012 will be: (a) 800 (b) 375 (c) 600 (d) None Ans : B [MTP Dec 23]
146.	If $\sum P_1 q_1 = 249$, $\sum P_0 q_0 = 150$, Paasche's Index Number=150 and Dorbish and Bowley's Index number = 145, then the Fisher's Ideal Index Number is (a) 175 (b) 144.91 (c) 145.97 (d) None Ans : B [MTP Dec 23]
147.	The Circular Test is known as: (a) $P_{01} \times P_{12} \times P_{20} = 1$ (b) $P_{12} \times P_{01} \times P_{20} = 1$ (c) $P_{20} \times P_{12} \times P_{01} = 1$ (d) $P_{02} \times P_{21} \times P_{12} = 1$ Ans : (a) [MTP Nov 22]
148.	Consumer Price Index Number goes up from 100 to 200 and salary of a worker is also raised from 300 to 500, then Real Wage is (a) 300 (b) 250 (c) 600 (d) 350 Ans : (c) [MTP Nov 22]
149.	The cost of living index number in year 2015 and 2018 were 97.5 and 115 respectively. The salary of a worker in 2015 was 19500. How much additional salary was required for him

	in 2018 to maintain the same standard of living as in 2015?			
	(a) 3000			
	(b) 4000			
	(c) 3500			
	(d) 4500			
	Ans : (c)			
	[MTP Nov 22]			
150.	The prices and quantities of 3 commodities in base and current years are as follows:			
	P_0	P_1	Q_0	Q_1

12	14	10	20
10	8	20	30
8	10	30	10
The Laspyre's Price Index Number is:			
(a) 118.13			
(b) 107.14			
(c) 120.10			
(d) None of these			
Ans : (b)			
[MTP NOV 22]			