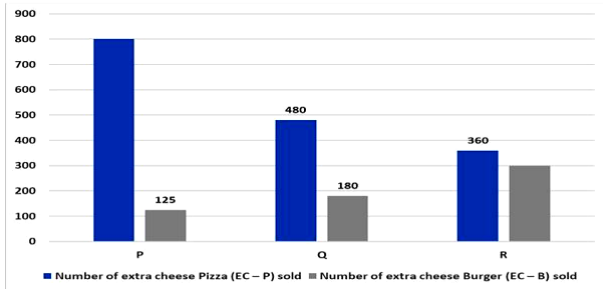


**DI Test 3 & 5**

**SET 1. Read the following information carefully and answer the questions based on it.**

The below bar graph shows the number of extra cheese Pizza (EC – P) and extra cheese Burger (EC – B) sold in three different shops – P, Q and R.



**Following facts is also known:** I. The number of Pizzas sold by Shop P is 960 and the number of Burgers sold by shop Q is 53.125% of Pizzas sold by Shop P. II. The total number of (Pizza + Burgers) sold by shop Q is 1710, which is 465 more than that of shop P and 210 more than that of shop R. III. The average number of pizzas sold by all shops together is 920. IV. The total number of Pizzas Sold = Extra Cheese Pizza (EC – P) + Normal Cheese Pizza (NC – P) The total number of Burger Sold = Extra Cheese Burger (EC – B) + Normal Cheese Burger (NC – B)

**Q1. Find the difference between the total Normal Cheese food items sold by shop Q and Shop R.** A.240 B.210 C.180 D.260 E.None of these

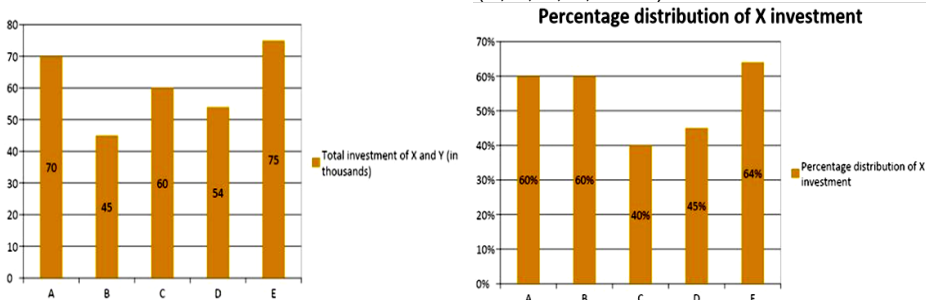
**Q2. Find the number of NC – B sold by shop Q and R together is how much percentage more or less than the number of pizzas sold by shop Q.** A.32.5% B.12.5% C.22.5% D.28.5% E.None of these

**Q3. Find the average number of NC – Pizzas sold by all three shops together.** A.373.33 B.374.33 C.372.33 D.375.33 E.None of these

**Q4. The number of NC – P sold by shop P and Q together is approximately how much percentage of (Pizza + burgers) sold by shop Q?** A.53% B.55% C.49% D.51% E.43%

**Q5. If the average selling cost of each Pizza is Rs. 160 and that of each burger is Rs. 100, then find the average selling cost of food item sold by shop R.** A.Rs. 134 B.Rs. 128 C.Rs. 120 D.Rs. 132 E.None of these

**SET 2. Study the bar graph to answer the following questions.** The given below bar graphs show the total investment of X and Y (in Rs. Thousand) and the Percentage of X investment out of total X and Y investment in 5 different schemes (A, B, C, D, and E).



**Q6. If scheme B offers compound interest (compounded annually) at 18% per annum, then what is the difference between the interest received by X and Y after two years?** A.Rs.3616.60 B.Rs.3708.70 C.Rs.3531.60 D.Rs.3875.60 E.None of these

**Q7. X is invested in scheme A offers simple interest at a rate of r % per annum. Y is invested in Scheme A offers compound interest at a rate of (r+5) % per annum. If the difference between the interest earned by X and Y after 3 years is Rs.1984.50 and the interest received in Y is more than X. Then find the interest received by Y?** A.Rs.14584.50 B.Rs.15624.50 C.Rs.16874.50 D.Rs.16984.50 E.None of these.

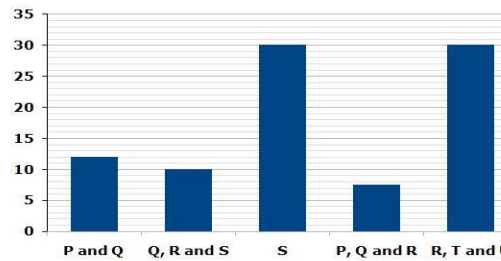
**Q8. X invested amount in scheme F is equal to Y invested his amount in scheme C and Y invested amount in scheme F is equal to X invested his amount in scheme B. Scheme F offers simple interest at a rate of 20% for 3 years. Find the total interest received by X and Y in scheme F.** A.Rs.36000 B.Rs.37650 C.Rs.36750 D.Rs.37800 E.None of these

**Q9. What is the respective ratio between total investment invested by X in scheme B and scheme D together and the total amount invested by Y in scheme C and Scheme E together?** A.60:70 B.57: 70 C.63: 71 D.60: 67 E.None of these

**Q10. Y invested in scheme C for 3 years. If scheme C offers simple interest at 8%per annum for the first year and 12%annum for the second year and 20%per annum at compound interest (compounded half-yearly) for the third year. Then what will be the interest earned by Y after 3 years?** A.Rs.17865.456 B.Rs.19876.625 C.Rs.18540.723 D.Rs.16786.890 E.None of these

**SET 3. Study the following data carefully and answer the questions:**

There are 6 pipes P, Q, R, S, T and U in a tank, out of which P, Q, R and S are inlet pipes while T and U are outlet pipes. Bar graph given below shows the time (in hours) taken by 6 given pipes to fill/empty the tank.



Some other information is also known: If pipe U works with 75% of its total efficiency, then it alone can empty the fully filled tank in 106 hours 40 minutes.

**Q11. If pipe P works with 100% efficiency, pipe Q works with 125% efficiency and R works with X% efficiency, pipe P, Q and R together to fill the tank in 8 8/9 hours, then Find the value of X.** A.75% B.50% C.80% D.60% E.40%

**Q12. If on Monday pipes P, Q and S together fill the tank, on Tuesday pipes R, S and T together fill the same tank and on Wednesday pipes S, T and U together fill that tank, then find the ratio of time taken to fill the tank on Monday, Tuesday and Wednesday respectively?** A.17: 25: 133 B.22: 32: 133 C.20: 27: 133 D.19: 28: 133 E.18: 23: 133

**Q13. If for the 1<sup>st</sup> one hour pipes P and Q are opened together, for the next three hours pipes T and U are opened together and for next one hour pipes P, Q, R and S are opened together, then what percent of the tank was filled?** A.16% B.25% C.20% D.12% E.10%

**Q14. If an outlet pipe V is joint with the tank and its efficiency is double that of outlet pipe T, then in how many hours pipes T, U and V together can empty the fully filled tank?** A.40 hours B.64 hours C.48 hours D.32 hours E.56 hours

**Q15. If pipe Q works with its 37.5% efficiency, pipe S works with its 25% efficiency, pipe T works with its 200% efficiency and pipe U works with its 50%, then in how many hours all the 4 pipes together can fill the tank?** A.1 day 20 hours B.2 day 4 hours C.2 day 8 hours D.1 day 16 hours E.Can't be determined

**SET 4. Read the following information carefully and answer the questions based on it.**

Anil doing an experiment in Chemistry lab. He has vessel A in which two acids X and Y is present and quantity of X is 166.66% of Y. He then took out 37.5% of solution from vessel A and poured into vessel B and rest poured into vessel C. He added 67.5 ml of acid X and 32.5 ml of acid Y in vessel B and 47.5 ml of acid X and 27.5 ml of acid Y in vessel C. Now the amount of acid Y in vessel C becomes 22.22% less than amount of acid X in vessel B.

**Q16. If there is an another vessel D, the amount of acid Y in vessel D is same as that of vessel B and the rest is acid X. When 40% of solution is removed from vessel X and then add 18 litres of acid X, now the ratio of acid X to acid Y becomes 3:2 in vessel D. Find the initial quantity of solution in vessel D.** A.120 ml B.180 ml C.220 ml D.240 ml E.None

**Q17. If Anmol doing the experiment with 60 ml more amount than what in vessel A. He took out \_\_\_\_\_ % of solution and added 63.5 ml of acid Y, the ratio of acid X to acid Y in solution becomes \_\_\_\_\_. Which of the following value(s) is/are satisfy the blanks is same order? I). 40%, 81:74 II). 20%, 540:451 III).12%, 2970:2427**

A.I only B.I and II only C.II and III only D.I, II and III E.None of the above

**Q18. If there is an another vessel E in which amount of acid X is same as that of acid X in vessel C and rest is acid Y. 20% of solution is removed and then add 37.6 ml acid Y, so ratio of acid X to acid Y in vessel E becomes 1:1. Find the initial quantity of acid Y in vessel E.** A.188 ml B.178 ml C.194 ml D.202 ml E.None of these

**Solution(1-5):- 2 3 1 4 5**

The number of Pizzas sold by Shop P is 960 and the number of Burgers sold by shop Q is 53.125% of Pizzas sold by Shop P.

So, the number of Burgers sold by shop Q =  $960 \times 53.125/100 = 510$

The total number of (Pizza + Burgers) sold by shop Q is 1710, which is 465 more than that of shop P and 210 more than that of shop R.

So, the number of Pizzas sold by Shop Q =  $1710 - 510 = 1200$

So, (Pizza + Burger) sold by shop P =  $1710 - 465 = 1245$

The number of Burgers sold by Shop P =  $1245 - 960 = 285$

(Pizza + Burger) sold by Shop R =  $1710 - 210 = 1500$

The total number of Pizzas Sold by (P + Q + R) =  $920 \times 3 = 2760$

So, the number of Pizzas sold by shop R =  $2760 - (1200 + 960) = 600$

The number of burgers sold by Shop R =  $1500 - 600 = 900$

Now we can calculate all the data

Shops	Number of Pizza	EC - P	NC - P	Number of Burgers	EC - B	NC - B
P	960	800	$960 - 800 = 160$	285	125	$285 - 125 = 160$
Q	1200	480	$1200 - 480 = 720$	510	180	$510 - 180 = 330$
R	600	360	$600 - 360 = 240$	900	300	$900 - 300 = 600$

**1. Answer: B**

The number of normal cheese food items sold by shop Q =  $720 + 330 = 1050$

The number of normal cheese food items sold by shop R =  $240 + 600 = 840$

Required difference =  $1050 - 840 = 210$

Hence answer is option B

**2. Answer: C**

According to the question,

The number of NC - B sold by (Q + R) =  $330 + 600 = 930$

The number of pizzas sold by shop Q = 1200

Required percentage change =  $(1200 - 960)/1200 \times 100 = 22.5\%$

Hence answer is option C

**3. Answer: A**

Required average =  $(160 + 720 + 240)/3 = 373.33$

Hence answer is option A

**4. Answer: D**

The number of NC - P sold by shop P and Q together =  $160 + 720 = 880$

(Pizzas + burgers) Sold by Shop Q = 1710

Required percentage =  $880 / 1710 \times 100 = 51\%$  (Approximately)

Hence answer is option D

**5. Answer: E**

The total selling cost of Pizzas =  $600 \times 160 = \text{Rs. } 96000$

The total selling cost of Burgers =  $900 \times 100 = \text{Rs. } 90000$

Required average cost =  $(96000 + 90000) / (600 + 900) = \text{Rs. } 124$

Hence answer is option E

**Solution(6-10):- 3 1 4 2 5****6. Answer: C**

The total amount invested in scheme B = Rs.45000

Amount invested by X = 60% of 45000 = Rs.27000

Amount invested by Y = Rs.18000

Difference = Rs.9000

$9000 (1 + 18/100)^2 - 9000 = \text{Rs. } 3531.60$

**7. Answer: A**

The total investment of X and Y = Rs.70000

X = 60% of (70000) = Rs.42000

Y = 70000 - 42000 = Rs.28000

$28000 [(1 + (r+5)/100)^3 - 1] - 42000 * 3 * r / 100 = 1984.50$

$28000 [(105+r) / 100]^3 - 1] - 1260r = 1984.50$

$28000 * 1.157625 + 0.028r^3 + 926.1r + 8.82r^2 - 28000 - 1260r = 1984.5$

$4413.50 + 0.028r^3 + 926.1r + 8.82r^2 - 1260r = 1984.50$

$r^2 + 33075r + 315r^2 - 45000r = -86750$

$r^3 - 11925 + 315r^2 = -86750$

$r = 10\%$

$B = 28000 * (23/20)^3 - 28000$

= Rs.14584.50

**8. Answer: D**

The total amount invested in scheme C = Rs.60000

Amount invested by Y = 60% of 60000 = Rs.36000

So amount invested in scheme F by X = Rs.36000

The total amount invested in scheme B = Rs.45000

Amount invested by X = 60% of 45000 = Rs.27000

So amount invested in scheme F by Y = Rs.27000

Simple interest =  $(36000+27000) * 20 * 3 / 100$

Simple interest = Rs.37800

**9. Answer: B**

The total amount invested in scheme B = Rs.45000

Amount invested by X = 60% of 45000 = Rs.27000

The total amount invested in scheme D = Rs.54000

Amount invested by X = 45% of 54000 = Rs.24300

The total amount invested in scheme C = Rs.60000

Amount invested by Y = 60% of 60000 = Rs.36000

The total amount invested in scheme E = Rs.75000

Amount invested by X = 36% of 75000 = Rs.27000

Required ratio =  $27000+24300 : 36000+27000$

= 57: 70

**10. Answer: E**

The total amount invested in scheme C = Rs.60000

Amount invested by Y = 60% of 60000 = Rs.36000

$36000 * 108/100 * 112/100 = \text{Rs. } 43545.60$

For 3<sup>rd</sup> interest calculated half yearly

$R = 20\%/2 = 10\%$  at 2 times

$$= 43545.60 [(1 + 10/100)^2 - 1] = 43545.60 [(121/100) - 1]$$

$$= \text{Rs.}9144.5760$$

**Solution(11-15):- 2 4 3 1 5**

$$\text{Since, } \frac{1}{Q} + \frac{1}{R} + \frac{1}{S} = \frac{1}{10}$$

$$\text{And, } \frac{1}{S} = \frac{1}{30}$$

$$\text{So, } \frac{1}{Q} + \frac{1}{R} = \frac{1}{10} - \frac{1}{30} = \frac{1}{15}$$

$$\text{Since, } \frac{1}{P} + \frac{1}{Q} + \frac{1}{R} = \frac{1}{7.5}$$

$$\text{So, } \frac{1}{P} = \frac{1}{7.5} - \frac{1}{15} = \frac{1}{15}$$

$$\text{Since, } \frac{1}{P} + \frac{1}{Q} = \frac{1}{12}$$

$$\text{So, } \frac{1}{Q} = \frac{1}{12} - \frac{1}{15} = \frac{1}{60}$$

$$\text{And, } \frac{1}{R} = \frac{1}{7.5} - \frac{1}{15} - \frac{1}{60} = \frac{1}{20}$$

$$\text{Since, } \frac{1}{R} - \frac{1}{T} - \frac{1}{U} = \frac{1}{30}$$

$$\text{So, } \frac{1}{T} + \frac{1}{U} = \frac{1}{20} - \frac{1}{30} = \frac{1}{60}$$

Given,

The time taken by pipe U alone to empty the tank, while working with 75% efficiency = 106 hours and 40 minutes =  $\frac{320}{3}$  hours

So, the time taken by pipe U alone to empty the tank, while working with 100% efficiency =  $\frac{320}{3} * \frac{3}{4} = 80$  hours

$$\text{So, } \frac{1}{T} = \frac{1}{60} - \frac{1}{80} = \frac{1}{240}$$

Now,

The time taken by pipe P alone to fill the tank = 15 hours

The time taken by pipe Q alone to fill the tank = 60 hours

The time taken by pipe R alone to fill the tank = 20 hours

The time taken by pipe S alone to fill the tank = 30 hours

The time taken by pipe T alone to empty the tank = 240 hours

The time taken by pipe U alone to empty the tank = 80 hours

**11. Answer: B**

The time taken by pipe P alone to fill the tank with 100% efficiency = 15 hours

The time taken by pipe Q alone to fill the tank with 100% efficiency = 60 hours

So, the time taken by pipe Q alone to fill the tank with 125% efficiency =  $60 * \frac{4}{5} = 48$  hours

The time taken by pipe R alone to fill the tank with 100% efficiency = 20 hours

Now,

$$\frac{1}{P} + \frac{1}{Q} + \frac{1}{R} = \frac{9}{80}$$

$$\frac{1}{15} + \frac{1}{48} + \frac{1}{R} = \frac{9}{80}$$

$$\frac{16R + 5R + 240}{240R} = \frac{9}{80}$$

$$21R + 240 = 27R$$

$$R = 40$$

Since, pipe R took 100% more than its original time to fill the tank, so pipe R worked with its 50% efficiency.

**12. Answer: D**

On Monday pipes P, Q and S work together:

$$\text{So, } \frac{1}{P} + \frac{1}{Q} + \frac{1}{S} = \frac{1}{15} + \frac{1}{60} + \frac{1}{30} = \frac{7}{60}$$

On Tuesday pipes R, S and T work together:

$$\text{So, } \frac{1}{R} + \frac{1}{S} - \frac{1}{T} = \frac{1}{20} + \frac{1}{30} - \frac{1}{240} = \frac{19}{240}$$

On Wednesday pipes S, T and U work together:

$$\text{So, } \frac{1}{S} - \frac{1}{T} - \frac{1}{U} = \frac{1}{30} - \frac{1}{240} - \frac{1}{80} = \frac{1}{60}$$

The required ratio of time =  $60/7:240/19: 60 = 19: 28: 133$

**13. Answer: C**

$$\text{Since, } \frac{1}{P} + \frac{1}{Q} = \frac{1}{15} + \frac{1}{60} = \frac{1}{12}$$

So, the time taken by pipes P and Q together to fill the tank = 12 hours

$$\text{Since, } \frac{1}{T} + \frac{1}{U} = \frac{1}{240} + \frac{1}{80} = \frac{1}{60}$$

So, the time taken by pipes T and U together to empty the tank = 60 hours

$$\text{Since, } \frac{1}{P} + \frac{1}{Q} + \frac{1}{R} + \frac{1}{S} = \frac{1}{15} + \frac{1}{60} + \frac{1}{20} + \frac{1}{30} = \frac{1}{6}$$

So, the time taken by pipes P, Q, R and S together to fill the tank = 6 hours

Let the total capacity of tank = LCM of 12, 60 and 6 = 60 unit

Now,

For the 1<sup>st</sup> one hour, the part of tank filled by pipes P and Q together =  $(\frac{60}{12}) * 1 = 5$  units

For the next 3 hours, the part of tank emptied by pipes T and U together =  $(\frac{60}{60}) * 3 = 3$  units

For the next 1 hour, the part of tank filled by pipes P, Q, R and S together =  $(\frac{60}{6}) * 1 = 10$  units

The total filled part of tank =  $5 - 3 + 10 = 12$  units

Required percentage =  $(\frac{12}{60}) * 100 = 20\%$

**14. Answer: A**

The time taken by pipe U alone to empty the tank = 80 hours

The time taken by pipe T alone to empty the tank = 240 hours

Since, the efficiency of pipe V is double that of pipe T.

So, the time taken by pipe V alone to empty the tank =  $240 * \frac{1}{2} = 120$  hours

$$\text{Now, } 1/T + 1/U + 1/V = 1/240 + 1/80 + 1/120 = 1/40$$

So, the time taken by pipes T, U and V together to empty the tank = 40 hours

**15. Answer: E**

The time taken by pipe Q alone to fill the tank with its 37.5% efficiency = 60

$$* 100/37.5 = 160 \text{ hours}$$

The time taken by pipe S alone to fill the tank with its 25% efficiency = 30 \*

$$100/25 = 120 \text{ hours}$$

The time taken by pipe T alone to empty the tank with its 200% efficiency = 240 \*

$$100/200 = 120 \text{ hours}$$

The time taken by pipe U alone to empty the tank with its 50% efficiency = 80 \*

$$100/50 = 160 \text{ hours}$$

Since, the total efficiency of inlet pipes Q and S is equal to the total efficiency of outlet pipes T and U, it means the tank can never be filled.

**Solution(16-20):- 3 2 1**

According to the given statement

Let amount of acid Y in vessel A be 24a

Amount of acid X in vessel A = 166.66% of 24a = 40a

37.5% of solution from A poured into B, and then add respective amounts

Amount of Acid X in vessel B = 37.5% x 40a + 67.5 = 15a + 67.5

Amount of acid Y in vessel B = 37.5% of 24a + 32.5 = 9a + 32.5

Rest 62.5% of solution from vessel A poured in vessel C, and then add respective amounts

Amount of acid X in vessel C = 62.5% of 40a + 47.5 = 25a + 47.5

Amount of acid Y in vessel C = 62.5% of 24a + 18.5 = 15a + 27.5

Now the amount of acid Y in vessel C becomes 22.22% less than amount of acid X in vessel B. the respective ratio is 7:9

$$\text{So, } (15a + 27.5)/(15a + 67.5) = 7/9$$

$$15a \times 9 + 27.5 \times 9 = 15a \times 7 + 67.5 \times 7$$

$$30a = 472.5 - 247.5$$

$$\text{So, } a = 225/30 = 7.5$$

So amount of acid X in vessel A = 40 x 7.5 = 300 ml

Amount of acid Y in vessel A = 24 x 7.5 = 180 ml

Amount of Acid X in vessel B = 15 x 7.5 + 67.5 = 180 ml

Amount of acid Y in vessel B = 9 x 7.5 + 32.5 = 100 ml

**16. Answer: C**

Let amount of acid X in vessel D be a ml

Amount of acid Y in vessel D = 100 ml

So,

$$(0.6a + 18)/(0.6 \times 100) = 3/2$$

$$1.2a + 36 = 180$$

$$\text{So, } a = 120 \text{ ml}$$

Initial quantity of solution in vessel D = 120 + 100 = 220 ml

**17. Answer: B**

Amount of solution in vessel with which Anmol is doing experiment = 480 + 60 = 540 ml

Ratio of acid X to acid Y in vessel = 5:3

**Statement I.**

After removal of 40% solution, and adding 63.5 ml acid Y

Amount of acid X in solution = 60% x 5/8 x 540 = 202.5 ml

Amount of acid Y in solution = 60% x 3/8 x 540 + 63.5 = 185

Required ratio = 202.5:185 = 81:74

This statement will satisfy the blanks.

**Statement II.**

After removal of 20% solution, and adding 63.5 ml acid Y

Amount of acid X in solution = 80% x 5/8 x 540 = 270ml

Amount of acid Y in solution = 80% x 3/8 x 540 + 63.5 = 225.5 ml

Required ratio = 270:225.5 = 540:451

This statement will satisfy the blanks.

**Statement III.**

After removal of 12% solution, and adding 63.5 ml acid Y

Amount of acid X in solution = 88% x 5/8 x 540 = 297ml

Amount of acid Y in solution = 88% x 3/8 x 540 + 63.5 = 241.7 ml

Required ratio = 2970:2417

This statement will not satisfy the blanks.

**18. Answer: A**

Amount of acid X in vessel C = amount of acid X in vessel E = 235 ml

Let amount of acid Y in vessel E be a ml

On removal of 20% mixture and adding 37.6 ml acid Y, ratio will be 1:1

$$235 \times 0.8 = 0.8 \times a + 37.6$$

$$\text{So } a = 188 \text{ ml}$$