Offer price $= \frac{₹\ 20,00,000}{2,50,000} = ₹\ 8$

Ex-Right $= \frac{(10,00,000 \times 13) + (2,50,000 \times 8)}{12,50,000} = 12$

Value of right per shares = 13 – 12 = ₹ 1

Value of right = ₹ 1 × 4 shares = ₹ 4

Before right = 100 share × 13 = ₹ 1,300

One share for 2 shares

Value of shares [150 × 10]	= ₹ 1,500
(-) Buy right shares [50 × 4]	= ₹ 200
	= ₹ 1,300

One share for 4 shares

Value of shares (125 × 12)	= ₹ 1,500
(-) Buy right shares (25 × 8)	= ₹ 200
	= ₹ 1,300

No change in wealth.

Question – 60

AMKO Limited has issued 75,000 equity shares of ₹ 10 each. The current market price per share is ₹ 36. The company has a plan to make a rights issue of one new equity share at a price of ₹ 24 for every four shares held.
You are required to:

(i) Calculate the theoretical post-rights price per share.

(ii) Calculate the theoretical value of the right alone.

(Exam November – 2018) (4 Marks)

Solution:

(i) Calculation of theoretical Post-rights (ex-right) price per share:

Ex-right value $= \left[\frac{MN + SR}{N + R}\right]$

Where,

M = Market price,

N = Number of old shares for a right share

S = Subscription price

R = Right share offer

$= \left[\frac{₹\ 36 \times 4 + ₹\ 24 \times 1}{4 + 1}\right]$

= ₹ 33.60

(ii) Calculation of theoretical value of the rights alone:

= Ex-right price – Cost of rights share

= ₹ 33.60 – ₹ 24 = ₹ 9.60

Or,

$= \frac{₹\ 33.60 - ₹\ 24}{4}$ = ₹ 2.40

Question – 61

Aggressive Ltd. is proposing to fund its expansion plan of ₹ 12 crore by making a rights issue. The current market price (CMP) is ₹ 40. The Board is willing to offer a discount of 20% on the CMP for the rights issue. The Board is also desirous that the fall in Ex-right price of the shares be restricted to 10% of CMP.

CALCULATE:

(1) The number of new equity shares to be offered for each rights held,

(2) Theoretical value of right and

(3) The total number of equity shares to be issued.

(MTP Oct – 2022)

Solution:

(1) Let assume number of right shares be x

$$\frac{(1 \times 40) + (x \times 32)}{x + 1} = 36$$

$$36 + 36x = 40 + 32x$$

$$x = 1$$

It means 1:1

(2) Value of right

= CMP – Ex right

= 40 – 36 = 4

(3) No. of shares to be issued

$$= \frac{1,20,00,000}{32} = 0.375 \text{ Cr.}$$

MONEY MARKET INSTRUMENTS

Question – 62

Suppose Govt. Pays ₹ 5,000 at maturity for 91 days Treasury bill. If Mr. Y is desirous to earn an annualized discount rate of 3.5%, then how he can pay for it.

Solution:

Suppose X be the maximum amount Mr. Y can pay for Treasury bill. Then,

$$= \frac{₹\ 5,000 - X}{₹\ 5,000} \times \frac{360}{91} = 0.035$$

$$= ₹\ 5,000 - X$$

$$= ₹\ 44.24$$

$$X = ₹\ 4,955.76$$

Question – 63

RBI sold a 91-day T-bill of face value of ₹ 100 at an yield of 6%. What was the issue price?

(SM TYK – 28)

Solution:

Let the issue price be X

By the terms of the issue of the T-bills:

$$6\% = \frac{100 - x}{x} \times \frac{365}{91} \times 100$$

$$\frac{6 \times 91 \times X}{36{,}500} = (100 - x)$$

$$0.01496x = 100 - x$$

$$x = \frac{100}{1.01496} = ₹\ 98.53$$

Question – 64

Wonderland Limited has excess cash of ₹ 20 lakhs, which it wants to invest in short term marketable securities. Expenses relating to investment will be ₹ 50,000.

The securities invested will have an annual yield of 9%

The company seeks your advice

(i) as to the period of investment so as to earn a pre-tax income of 5%. (discuss)

(ii) the minimum period for the company to breakeven its investment expenditure overtime value of money.

(SM TYK – 29)

Solution:

(i) Pre-tax Income required on investment of ₹ 20,00,000

Let the period of Investment be 'P' and return required on investment ₹ 1,00,000 (₹ 20,00,000 × 5%)

Accordingly,

$$(₹\ 20,00,000 \times \frac{9}{100} \times \frac{P}{12}) - ₹\ 50,000 = ₹\ 1,00,000$$

P =10 months

(ii) Break-Even its investment expenditure

$$(₹\ 20,00,000 \times \frac{9}{100} \times \frac{P}{12}) - ₹\ 50,000 = 0$$

P = 3.33 months

Question – 65

A bond is held for period of 45 days. The current discount yield is 6 per cent per annum. It is expected that current yield will increase by 200 basis points and current market price will come down by ₹ 2.50.

Calculate :

i Face value of the Bond and

ii. Bond Equivalent yield

(Exam May – 2019) (4 Marks)

Solution:

(i) Face Value of the Bond

(6%) 45 days discount yield $= 6 \times \frac{45}{360} = 0.75$

(8%) 45 days discount yield $= 8 \times \frac{45}{360} = 1.00$

Change in discount yield = 1 – 0.75 = 0.25%

Change in bond price = ₹ 2.50

Hence, face value of bond $= \frac{\text{Change in Price}}{\text{Change in Discount Yield}}$

$= \frac{₹\ 2.50}{2.5\%}$

= ₹ 1,000

(ii) Bond Equivalent Yield

Current market price of bond

If discount yield is 6% p.a. then ₹ 1,000 – 0.75% = ₹ 992.50

If discount yield is 8% p.a. then ₹ 1,000 – 1.00% = ₹ 900.00

At the rate of 6%	$\frac{1,000-992.50}{992.50} \times \frac{360}{45} \times 100$ †	6.05
At the rate of 8%	$\frac{1,000-990.00}{990.00} \times \frac{360}{45} \times 100$ †	8.08

Question – 66

From the following particulars, calculate the effective rate of interest p.a. as well as the total cost of funds to Bhaskar Ltd., which is planning a CP issue:

Issue Price of CP	₹ 97,550
Face Value	₹ 1,00,000
Maturity Period	3 Months
Issue Expenses:	
Brokerage	0.15% for 3 months
Rating Charges	0.50% p.a.
Stamp Duty	0.175% for 3 months

(MTP October – 2020)

Solution:

$$\text{Effective Interest} = \left(\frac{F-P}{P}\right) \times \frac{12}{M} \times 100$$

Substituting the given values of F, P and M we get,

$$\text{Effective Interest} = \left(\frac{1,00,000-97,550}{97,550}\right) \times \frac{12}{3} \times 100 = 10.05\%$$

Cost of funds to the company

Effective interest rate	= 10.05%
Brokerage (0.15 × 4)	= 0.6%
Rating charges	= 0.5%
Stamp duty (0.175 × 4)	= 0.75%
Total cost of Funds to Bhaskar Ltd.	= 11.9% p.a.

Question – 67

Bank A enter into a Repo for 14 days with Bank B in 10% Government of India Bonds 2018 @ 5.65% for ₹ 8 crore. Assuming that clean price be ₹ 99.42 and initial margin be 2% and days of accrued interest be 262 days. You are required to determine.

(i) Dirty Price

(ii) Repayment at maturity. (Consider 360 days in a year)

(SM TYK – 31, MTP March & April – 2021)

Solution:

(i) Dirty Price

= Clean Price + Interest Accrued

$$= 99.42 + 100 \times \frac{10}{100} \times \frac{262}{360} = 106.70$$

(ii) First Leg (Start Proceed)

$$= \text{Nominal Value} \times \frac{\text{Dirty Price}}{100} \times \frac{100 - \text{Initial Margin}}{100}$$

$$= ₹\ 8,00,00,000 \times \frac{106.70}{100} \times \frac{100-2}{100} = ₹\ 8,36,52,800$$

Second Leg (Repayment at Maturity)

$$= \text{Start Proceed} \times \left(1 + \text{Repo Rate} \times \frac{\text{No. of Days}}{360}\right)$$

$= ₹\ 8,36,52,800 \times \left(1 + 0.0565 \times \frac{14}{360}\right)$

$= ₹\ 8,38,36,604$

Question – 68

The Bank BK enters into a Repo for 9 days with Bank NE in 6% Government bonds 2022 for an amount of ₹ 2 crore. The other relevant details are as follows:

First Leg Payment (Start Proceed)	₹ 2,00,06,750
Second Leg Payment (Repayment Proceed)	₹ 2,00,31,759
Initial Margin	1.25%
Days of accrued interest	240

Assume 360 days in a year.

CALCULATE:

(1) Repo Rate

(2) Dirty Price and

(3) Clean Price

(MTP Oct – 2022)

Solution:

(1) Second Leg $= \text{Start Proceed} \times \left(1 + \text{Repo Rate} \times \frac{\text{No.of days}}{360}\right)$

$₹\ 2,00,31,759 = ₹\ 2,00,06,750 \times \left(1 + \text{Repo Rate} \times \frac{9}{360}\right)$

$1.00125 = \left(1 + \text{Repo Rate} \times \frac{9}{360}\right)$

$\text{Repo Rate} = 0.05 = 5\%$

(2) First Leg (Start Proceed)

$= \text{Nominal Value} \times \frac{\text{Dirty Price}}{100} \times \frac{100 - \text{Initial Margin}}{100}$

₹ 2,00,06,750 = ₹ 2,00,00,000 × $\frac{\text{Dirty Price}}{100}$ × $\frac{100 - 1.25}{100}$

10003.375 = 98.75 × Dirty Price

Dirty Price = ₹ 101.30

(3) **Dirty Price** = Clean Price + Interest Accrued

101.30 = Clean Price + 100 × $\frac{240}{360}$ × 6%

Clean Price = ₹ 97.30

RESIDUAL

Question – 69

Following Financial data are available for PQR Ltd. for the year 2008:

	(₹ in lakh)
8% debentures	125
10% bonds (2007)	50
Equity shares (₹ 10 each)	100
Reserves and Surplus	300
Total Assets	600
Assets Turnovers ratio	1.1
Effective interest rate	8%
Effective tax rate	40%
Operating margin	10%
Dividend payout ratio	16.67
Current market Price of Share	14
Required rate of return of investors	15%

You are required to:

(i) Draw income statement for the year

(ii) Calculate its sustainable growth rate of earnings

(iii) Calculate the fair price of the Company's share using dividend discount model, and

(iv) What is your opinion on investment in the company's share at current price?

(SM TYK – 12 & RTP May – 2020)

Solution:

(i) Income Statement

Sales (600 × 1.10)	₹ 660
(-) Operating Ratio (660 × 90%)	₹ 594
EBIT	₹ 66
(-) Interest [(125 + 50) × 8%]	₹ 14
EBT	₹ 52
(-) Tax 40%	₹ 20.80
EAT	31.20
(÷) No. of Shares	10
EPS	3.12
DPS (16.67%)	0.52

(ii) Sustainable Growth Rate

$g = b \times r$

$b = 1 - 0.1667 = 0.8333$

$$\text{ROE (r)} = \frac{\text{EAT}}{\text{Equity}} \times 100$$

$$= \frac{31.20}{300 + 100} \times 100$$

$= 7.8\ \%$

$g = 0.8333 \times 0.078 = 0.065$

$= 6.5\%$

(iii) Price (P_0)

$$P_0 = \frac{D_1}{K_e - g}$$

$$= \frac{0.52 \times (1.065)}{0.15 - 0.065}$$

= ₹ 6.52

(iv) Actual Price = 14

Share is overpriced hence should not be purchased.

Question – 70

Tiger Ltd. is presently working with an Earning Before Interest and Taxes (EBIT) of ₹ 90 lakhs. Its present borrowings are as follows:

	₹ in lakhs
12% term loan	300
Working capital borrowings:	
From Bank at 15%	200
Public Deposit at 11%	100

The sales of the company are growing and to support this, the company proposes to obtain additional borrowing of ₹ 100 lakhs expected to cost 16%.The increase in EBIT is expected to be 15%.

Calculate the change in interest coverage ratio after the additional borrowing is effected and comment on the arrangement made.

Solution:

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest}}$$

$$\text{Present} = \frac{90}{77}$$

= 1.69

Proposed = 90 × 1.15

= 103.50

Interest = 77 + 100 × 16 %

= 93

$$\text{Interest Coverage} = \frac{103.50}{93} = 1.113$$

Since interest coverage ratio is decreasing hence proposal should be accepted.

Question – 71

Capital structure of Sun Ltd., as at 31.3.2003 was as under:

	(₹ lakhs)
Equity share capital	80
8% Preference share capital	40
12% Debentures	64
Reserves	32

Sun Ltd., earns a profit of ₹ 32 lakhs annually on an average before deduction of income-tax, which works out to 35%, and interest on debentures.

Normal return on equity shares of companies similarly placed is 9.6% provided:

(a) Profit after tax covers fixed interest and fixed dividends at least 3 times.

(b) Capital gearing ratio is 0.75.

(c) Yield on share is calculated at 50% of profits distributed and at 5% on undistributed profits.

Sun Ltd., has been regularly paying equity dividend of 8%.

Compute the value per equity share of the company.

(i) 1% for every time of difference for interest and fixed dividend coverage ratio.

(ii) 2% for every time of difference for capital gearing ratio.

(SM TYK – 07)

Solution:

Income Statement

EBIT	32,00,000
(-) Interest (64,00,000 × 12 %)	7,68,000
EBT	24,32,000

(-) Tax @ 35%	8,51,200	
EAT	15,80,800	
(-) PD (40,00,000 × 8 %)	3,20,000	
Earning	12,60,800	
Dividend (8,000,000 × 8%)	6,40,000	(Distributed Profit)
Undistributed Profit	6,20,800	

Yield (Income) = (6,40,000 × 50%) + (6,20,800 × 5%)

= 3,51,040

Required Rate of Return after Risk Adjustment

(1) Coverage Ratio

$$= \frac{\text{PAT + INTEREST}}{\text{INTEREST + PD}}$$

$$= \frac{15,50,800 + 7,68,000}{7,68,000 + 3,20,000}$$

= 2.16

Coverage ratio is less than 3 times it means higher risk.

(2) Capital Gearing Ratio

$$= \frac{\text{PSC + Debt}}{\text{ESC + R \& S}}$$

$$= \frac{40,00,000 + 64,00,000}{80,00,000 + 32,00,000}$$

= 0.93

Capital gearing ratio is more than 0.75. It means higher risk.

Required Yield

Similar Yield	9.6%
(+) Risk Adjustment	

Coverage Ratio

(3 – 2.16) = 0.84 × 1 — 0.84%

(+) Risk Adjustment for Capital Gearing Ratio

(0.93 – 0.75) = 0.18 × 2 — 0.36%

10.80%

Value per Share

$$P_0 = \frac{\text{Yield on Equity}}{\text{Required Yield}} \times \text{per share}$$

$$\text{Yield} = \frac{3,51,040}{8,00,000} \times 100 = 4.368\%$$

$$P_0 = \frac{4.388\%}{10.80\%} \times 100 = ₹\ 40.63$$ Assume = ₹ 100 (FV)

Question – 72

AB Industries has Equity Capital of ₹ 12 Lakhs, total Debt of ₹ 8 Lakhs, and annual sales of ₹ 30 Lakhs. Two mutually exclusive proposals are under consideration for the next year. The details of the proposals are as under:

Particulars	Proposal No. 1	Proposal No. 2
Target Assets to Sales Ratio	0.65	0.62
Target Net Profit Margin (%)	4	5
Target Debt Equity Ratio (DER)	2:3	4:1
Target Retention Ratio (of Earnings) (%)	75	-
Annual Dividend (₹ In Lakhs)	-	0.30
New Equity Raised (₹ in Lakhs)	-	1

You are required to calculate sustainable growth rate for both the proposals.

(Exam November – 2020) (8 Marks)

Solution:

Proposal I:

$$\text{ROE} = 4 \times \frac{1}{0.65} \times \frac{5}{3}$$

$$= 10.26\%$$

$$g = b \times r$$

$$= 0.75 \times 0.1026$$

$$= 0.0770$$

$$= 7.70\%$$

Proposal II:

$$\text{ROE} = 5 \times \frac{1}{0.65} \times \frac{5}{1}$$

$$= 40.32\%$$

Target Equity = 12 + 1 = 13 lakh

Debt = 13 × 4 = 52 lakh

Total Asset = 13 lakh + 52 lakh = 65 lakh

$$\text{TA to Sales} = \frac{65}{0.62} = 104.84$$

Net Profit = 104.84 × 5%

= 5.242

$$b = \frac{5.242 - 0.30}{5.242} \times 100$$

= 0.943

g = 0.943 × 0.4032

= 38%

ADDITIONAL QUESTIONS

Question – 01

Following information is related to the 7.50% Convertible bond of S Ltd. which is currently priced at ₹ 5,300 per bond:

- Conversion Parity Price = ₹ 265
- Conversion Premium (Based on Market Price) = 10.41667%
- Percentage of Downside Risk based on Straight Value of Bond = 12.766%

Required:

(i) Calculate No. of shares on Conversion.

(ii) Analyze Current Market Price Per Share of S Ltd.

(iii) Assess the Straight Value of Bond.

(iv) Based on straight value of bond computed above, determine the approximate required rate of return by an investor on similar category of bonds.

Note: Use following Present Value Factors (PVFs) for various calculations:

	1	2	3	4	5
PVF @ 8%	0.9259	0.8573	0.7938	0.7350	0.6806
PVF @ 10%	0.9091	0.8264	0.7513	0.6830	0.6209

(MTP April – 2025)

Solution:

(i) $$\text{Conversion Parity Price} = \frac{\text{Bond Price}}{\text{No. of Shares on Conversion}}$$

$$₹\ 265 = \frac{5{,}300}{\text{No. of Shares on Conversion}}$$

No. of Shares on Conversion = 20 Shares

(ii) $$\text{Conversion Premium} = \frac{(\text{Conversion Parity Price} - \text{Market Price}}{\text{Market Price}} \times 100$$

$$10.41667\% = \frac{(₹\ 265 - \text{Market Price})}{\text{Market Price}} \times 100$$

Market Price = ₹ 240

(iii) Percentage of Downside Risk

$$= \frac{\text{Market Price of Bond} - \text{Straight Value of Bond}}{\text{Straight Value of Bond}} \times 100$$

$$12.766\% = \frac{(₹\ 5{,}300 - \text{Straight Value of Bond})}{\text{Straight Value of Bond}} \times 100$$

Straight Value of Bond = ₹ 4,700

(iv) To determine the required return, we shall discount related cash flows as follows:

PV@8%

Year	Cash Flow	PVF	PV
0	-4,700	1	-4,700
1	375	0.9259	347.21
2	375	0.8573	321.49
3	375	0.7938	297.68
4	375	0.7350	275.63
5	5,375	0.6806	3,658.23
			200.23

PV@10%

Year	Cash Flow	PVF	PV
0	-4,700	1	-4,700
1	375	0.9091	340.91
2	375	0.8264	309.90
3	375	0.7513	281.74
4	375	0.6830	256.13
5	5,375	0.6209	3,337.34
			-173.99

Calculation of Required return using IRR

$$= 8\% + \frac{200.23}{200.23 + 173.99} \times 2\%$$

$$= 8\% + \frac{200.23}{374.22} \times 2\% = 8\% + 1.07\% = 9.07\%$$

Question – 02

TK Ltd. has ₹ 600 Lakh 12% Debenture outstanding with 5 years remaining to redemption. Since interest rates are decreasing, company is planning to redeem these debentures with a ₹ 600 Lakh issue of 5 years 10% Debenture at par. Issued Cost of 10% Debenture will be ₹ 10 Lakh. Premium paid on redemption of 12% Debenture is 5% Tax rate applicable to company 15, is 20%

You are required to advise on the 12% Debenture Redemption Decision.

PVF @ 10% & 8% are as under —

Rate	1	2	3	4	5
8%	0.93	0.86	0.79	0.74	0.68
10%	0.91	0.83	0.75	0.68	0.62

Calculation up to 2 decimal points.

(Exam September – 2025)

Solution:

(i) Calculation of initial outlay:-

		₹ (Lakh)
a.	Face value	600
	Add: Call premium	30
	Less: Tax on Premium of Redemption	6
	Cost of calling old bonds	624
b.	Gross proceed of new issue	600
	Less: Issue costs	10
	Net proceeds of new issue	590

∴ Initial outlay = ₹ 624 Lakh – ₹ 590 Lakh = ₹ 34 Lakh

(ii) Calculation of net present value of refunding the bond:

Saving in annual interest expenses	₹ (Lakh)
[600 × (0.12 – 0.10)]	12.00
Less: Tax saving on interest (0.20 × 12)	2.40
Add: Tax Saving on Issue Exp. (10/5) × 0.20	0.40
Annual net cash saving	10.00
PVIFA (8%, 5 years)	4.00
∴ Present value of net annual cash saving	₹ 40.00 Lakh
Less: Initial outlay	₹ 34.00 Lakh
Net present value of refunding the bond	₹ 6.00 Lakh

Decision: 12% Debentures should be redeemed and new 10% Debentures should be issued because NPV of Bond Refunding decision is positive.

Alternative Solution: Since in the Question specifically nothing has been mentioned about the writing off Issue Expenses for 10% Debentures, if students have assumed it to be written off at the time of issue in one go then solution will be as follows:

(i)	**Calculation of initial outlay:-**	**₹ (Lakh)**
a.	Face value	600
	Add: Call premium	30
	Less: Tax on Premium of Redemption	6
	Cost of calling old bonds	624
b.	Gross proceed of new issue	600
	Less: Issue costs	10
	Add: Tax Saving on Issue Expenses	2
	Net proceeds of new issue	592

∴ Initial outlay = ₹ 624 Lakh – ₹ 592 Lakh = ₹ 32 Lakh

(ii) Calculation of net present value of refunding the bond:-

Saving in annual interest expenses	₹ (Lakh)
[600 × (0.12 – 0.10)]	12.00
Less: Tax saving on interest (0.20 × 12)	2.40
Annual net cash saving	9.60
PVIFA (8%, 5 years)	4.0
∴Present value of net annual cash saving	₹ 38.40 Lakh
Less: Initial outlay	₹ 32.00 Lakh
Net present value of refunding the bond	₹ 6.40 Lakh

Decision: 12% Debentures should be redeemed and new 10% Debentures should be issued because NPV of Bond Refunding decision is positive.