

For year 2 = 0.7561

(SM TYK – 03)

Solution:

$$D_0 = ₹ 4$$

$$D_1 = ₹ 4 (1.20) = ₹ 4.80$$

$$D_2 = ₹ 4 (1.20)^2 = ₹ 5.76$$

$$D_3 = ₹ 4 (1.20)^2 (1.10) = ₹ 6.336$$

$$TV = \frac{D_3}{(k_e - g)} = \frac{6.336}{0.15 - 0.10} = 126.72$$

$$P = \frac{4.80}{(1 + 0.15)} + \frac{5.76}{(1 + 0.15)^2} + \frac{126.72}{(1 + 0.15)^2}$$

$$= 4.80 \times 0.8696 + 5.76 \times 0.7561 + 126.72 \times 0.7561$$

$$= 104.34$$

Question – 46

M/s. B Ltd. has declared dividend of ₹ 2.50 per share on the EPS of ₹ 7. Earnings of the company are expected to grow at the rate of 10% for the next 3 years and to be stabilized at 3% thereafter.

The pay-out ratio is expected to remain at the same level during 3 years and then will increase to 60%. If required rate of return is 16% calculate:

- (i) The current price of the share.
- (ii) The expected price of share of B Ltd. At the end of 3rd year.

Following table may be used for calculations.

Present Value	t ₁	t ₂	t ₃	t ₄	t ₅
PVIF _{0.16,t}	0.862	0.743	0.641	0.553	0.477

(Exam Jan – 2021) (5 Marks)

Solution:

EPS & DPS

	1	2	3	4
EPS (₹ 27)	7.70	8.47	9.317	9.597
DPS (2.50)	2.75	3.025	3.328	5.758

Stage I

$$\begin{aligned}
 P.V. &= (2.75 \times 0.862) + (3.025 \times 0.743) + (3.328 \times 0.641) \\
 &= ₹ 6.751
 \end{aligned}$$

Stage II

$$\begin{aligned}
 P_3 &= \frac{D_4}{K_e - g} \\
 &= \frac{5.758}{0.16 - 0.03} \\
 &= ₹ 44.29 \\
 &= ₹ 44.29 \times 0.641 = 28.39
 \end{aligned}$$

$$\begin{aligned}
 P_0 &= 6.751 + 28.39 \\
 &= ₹ 35.141
 \end{aligned}$$

Question – 47

X Limited, just declared a dividend of ₹14.00 per share Mr. B is planning to purchase the share of X Limited, anticipating increase in growth rate from 8% to 9%, which will continue for three years. He also expects the market price of this share to be ₹ 360.00 after three years.

You are required to determine:

- (i) the maximum amount Mr. B should pay for shares, if he requires a rate of return of 13% per annum.
- (ii) the maximum price Mr. B will be willing to pay for share, if he is of the opinion that the 9% growth can be maintained indefinitely and require 13% rate of return per annum.
- (iii) the price of share at the end of three years, if 9% growth rate is achieved and assuming other conditions remaining same as in (ii) above.

Calculate rupee amount up to two decimal points.

	Year-1	Year-2	Year-3
FVIF @ 9%	1.090	1.188	1.295
FVIF @ 13%	1.130	1.277	1.443
PVIF @ 13%	0.885	0.783	0.693

(SM TYK – 05)

Solution:

(i) Expected dividend for next 3 years.

$$\text{Year 1 (D}_1\text{)} \quad ₹ 14.00 (1.09) \quad = ₹ 15.26$$

$$\text{Year 2 (D}_2\text{)} \quad ₹ 14.00 (1.09)^2 \quad = ₹ 16.63$$

$$\text{Year 3 (D}_3\text{)} \quad ₹ 14.00 (1.09)^3 \quad = ₹ 18.13$$

Required rate of return = 13% (K_e)

Market price of share after 3 years = (P₃) = ₹ 360

The present value of share

$$P_0 = \frac{15.26}{(1 + 0.13)} + \frac{16.63}{(1 + 0.13)^2} + \frac{18.13}{(1 + 0.13)^3} + \frac{360}{(1 + 0.13)^3}$$

$$P_0 = 15.26(0.885) + 16.63(0.783) + 18.13(0.693) + 360(0.693)$$

$$P_0 = 13.50 + 13.02 + 12.56 + 249.48$$

$$P_0 = ₹ 288.56$$

(ii) If growth rate 9% is achieved for indefinite period, then maximum price of share should Mr. A willing be to pay is

$$P_0 = \frac{D_1}{(1 - k_e)} = \frac{₹ 15.26}{(0.13 - 0.09)} = \frac{₹ 15.26}{0.04} = ₹ 381.50$$

(iii) Assuming that conditions mentioned above remain same, the price expected after 3 years will be:

$$P_3 = \frac{D_4}{k_e - g} = \frac{D_3(1.09)}{0.13 - 0.09} = \frac{18.13 \times 1.09}{0.04} = \frac{19.76}{0.04} = ₹ 494$$

Question – 48

XYZ Ltd. paid a dividend of ₹ 2 for the current year. The dividend is expected to grow at 40% for the next 5 years and at 15% per annum thereafter. The return on 182 days T-bills is 11% per annum and the market return is expected to be around 18% with a variance of 24%.

The co-variance of XYZ's return with that of the market is 30%. You are required to calculate the required rate of return and intrinsic value of the stock.

(SM TYK – 17)

Solution:

$$\begin{aligned} \text{Beta} &= \frac{\text{Cov}_{xm}}{\sigma_m^2} \\ &= \frac{30}{24} = 1.25 \end{aligned}$$

Required Rate of Return

$$\begin{aligned} K_e &= R_f + \beta (R_m - R_f) \\ &= 11 + 1.25 (18 - 11) \\ &= 19.75\% \end{aligned}$$

	Year	PVF (19.75%)	Amount	P.V.
Dividend				
2 (1.40) ¹	1	0.835	2.80	2.34
2.80 × 1.40	2	0.697	3.92	2.73
3.92 × 1.40	3	0.582	5.488	3.19
5.488 × 1.40	4	0.486	7.683	3.73
7.683 × 1.40	5	0.406	10.756	4.37
Terminal value (W.N.1)	5	0.406	260.41	105.77
			P₀	122.13

Terminal Value

$$\begin{aligned} P_5 &= \frac{D_6}{K_e - g} \\ &= \frac{10.756 (1.15)}{0.1975 - 0.15} \end{aligned}$$

$$= ₹ 260.41$$

Question – 49

Mr. A is thinking of buying shares at ₹ 500 each having face value of ₹ 100. He is expecting a bonus at the ratio of 1:5 during the fourth year. Annual expected dividend is 20% and the same rate is expected to be maintained on the expanded capital base. He intends to sell the shares at the end of seventh year at an expected price of ₹ 900 each. Incidental expenses for purchase and sale of shares are estimated to be 5% of the market price. He expects a minimum return of 12% per annum.

Should Mr. A buy the share? If so, what maximum price should he pay for each share? Assume no tax on dividend income and capital gain.

(SM TYK – 14 & RTP November – 2019)

Solution:

NPV

	Year	PVF (12%)	Amount	P.V.
Dividend				
₹ 100 × 20%	1	0.893	20.00	17.86
	2	0.797	20.00	15.94
	3	0.712	20.00	14.24
₹ 100 × 20% × 1.2 shares	4	0.636	24.00	15.26
	5	0.567	24.00	13.61
	6	0.507	24.00	12.17
	7	0.452	24.00	10.85
Sell Share 900 × 1.20 × 0.95	7	0.452	1026.00	463.75
			P.V. CI =	₹ 563.68

$$\text{NPV} = ₹ 563.68 - 500 \times 1.05$$

$$= ₹ 38.68$$

Since NPV is positive, hence share should be purchased.

$$\text{Maximum price} = \frac{₹ 563.68}{1.05}$$

$$= ₹ 536.84$$

Question – 50

Seawell Corporation, a manufacturer of do-it-yourself hardware and house wares, reported earnings per share of € 2.10 in 2003, on which it paid dividends per share of €0.69. Earnings are expected to grow 15% a year from 2004 to 2008, during this period the dividend payout ratio is expected to remain unchanged. After 2008, the earnings growth rate is expected to drop to a stable rate of 6%, and the payout ratio is expected to increase to 65% of earnings. The firm has a beta of 1.40 currently, and is expected to have a beta of 1.10 after 2008. The market risk premium is 5.5%. The Treasury bond rate is 6.25%.

- (a) What is the expected price of the stock at the end of 2008?
- (b) What is the value of the stock, using the two-stage dividend discount model?

(RTP May – 2019)

Solution:

Working Note 1: Calculation of EPS & DPS

	2004	2005	2006	2007	2008	2009
EPS (2.10)	2.415	2.777	3.194	3.673	4.224	4.477
DPS (0.69)	0.794	0.913	1.049	1.207	1.388	2.910

$$K_e = R_f + \beta (R_m - R_f)$$

Before 2008

$$K_e = 6.25 + 1.40 \times 5.5 = 13.95$$

After 2008

$$K_e = 6.25 + 1.10 \times 5.5 = 12.30$$

(1) Expected price at the end of 2008

$$\begin{aligned}
 P_5 &= \frac{D_6}{K_e - g} \\
 &= \frac{2.910}{0.1230 - 0.06} = \text{€ } 46.19
 \end{aligned}$$

(2) Present Value of stock

Stage I

$$\begin{aligned} P.V. &= (0.794 \times 0.878) + (0.913 \times 0.770) + (1.049 \times 0.676) + \\ &\quad (1.207 \times 0.593) + (1.388 \times 0.521) \\ &= \text{€ } 3.548 \end{aligned}$$

Stage II

$$\begin{aligned} &= \text{€ } 46.19 \times 0.521 \\ &= \text{€ } 24.065 \\ P_0 &= \text{€ } 3.548 + \text{€ } 24.065 \\ &= \text{€ } 27.613 \end{aligned}$$

Question – 51

The current EPS of M/s VEE Ltd. is ₹ 4. The company has shown an extraordinary growth of 40% in its earnings in the last few years this high growth rate is likely to continue for the next 5 years after which growth rate in earnings will decline from 40% to 10% during the next 5 years and remain stable at 10% thereafter. The decline in the growth rate during the 5 years transition period will be equal and linear. Currently, the company's pay-out ratio is 10%. It is likely to remain the same for the next five years and from the beginning of the sixth year till the end of the 10th year, the pay-out will linearly increase and stabilize at 50% at the end of the 10th year. The post tax cost of capital is 17% and the PV factors are given below:

Years	1	2	3	4	5	6	7	8	9	10
PVIF @17%	0.855	0.731	0.625	0.534	0.456	0.390	0.333	0.285	0.244	0.209

You are required to Calculate the intrinsic value of the company's stock based on expected dividend. if the current market price of the stock is ₹ 125, suggest if it is advisable for the investor to invest in the company's stock or not.

(Exam November – 2019) (8 Marks)

Solution:

Calculation of EPS & DPS

	1	2	3	4	5	6	7	8	9	10
Growth	40%	40%	40%	40%	40%	34%	28%	22%	16%	10%
EPS (4)	5.60	7.84	10.976	15.366	21.513	28.827	36.899	45.017	52.220	57.441
DPR	10%	10%	10%	10%	10%	18%	26%	34%	42%	50%
DPS	0.56	0.784	1.098	1.537	2.151	5.189	9.594	15.306	21.932	28.721
PVF	0.855	0.731	0.625	0.534	0.456	0.390	0.333	0.285	0.294	0.209

Stage I: Present value of dividend = ₹ 24.47

Stage II: Present value of terminal value

$$\begin{aligned}
 P_{10} &= \frac{D_{11}}{K_e - g} \\
 &= \frac{28.721 (1.10)}{0.17 - 0.10} \\
 &= ₹ 451.33 \times 0.209 \\
 &= 94.328
 \end{aligned}$$

$$\begin{aligned}
 IV_0 &= 24.47 + 94.328 \\
 &= ₹ 118.798
 \end{aligned}$$

As Intrinsic Value of the share is lower than its selling price of ₹ 125, it is overpriced and can not be acquired.

Question - 52

An investor is considering to purchase the equity shares of LX Ltd., whose current market price (CMP) is ₹ 112. The company is proposing a dividend of ₹ 4 for the next year. LX Ltd. is expected to grow @ 20 per cent per annum for the next four years. The growth will decline linearly to 16 per cent per annum after first four years. Thereafter, it will stabilize at 16 per cent per annum infinitely. The investor requires a return of 20 per cent per annum.

You are required

- (i) To calculate the intrinsic value of the share of LX Ltd.
- (ii) Whether it is worth to purchase the share at this price.

Period	1	2	3	4	5	6	7
PVIF (20%,n)	0.833	0.694	0.579	0.482	0.402	0.335	0.279

(Exam November – 2020) (8 Marks)**Solution:**

$$D_1 = ₹ 4$$

$$D_2 = ₹ 4 (1.20) = ₹ 4.80$$

$$D_3 = ₹ 4 (1.20)^2 = ₹ 5.76$$

$$D_4 = ₹ 4 (1.20)^3 = ₹ 6.91$$

$$D_5 = ₹ 6.91 (1.19) = ₹ 8.22$$

$$D_6 = ₹ 6.91 (1.19) (1.18) = ₹ 9.70$$

$$D_7 = ₹ 6.91 (1.19) (1.18) (1.17) = ₹ 11.35$$

$$D_8 = ₹ 6.91 (1.19) (1.18) (1.17) (1.16) = ₹ 13.17$$

$$TV_7 = \frac{D_8}{k_e - g} = \frac{13.17}{0.20 - 0.16} = ₹ 329.25$$

$$P = \frac{4.00}{(1 + 0.20)} + \frac{4.80}{(1 + 0.20)^2} + \frac{5.76}{(1 + 0.20)^3} + \frac{6.91}{(1 + 0.20)^4} + \frac{8.22}{(1 + 0.20)^5} + \frac{9.70}{(1 + 0.20)^6} + \frac{11.35}{(1 + 0.20)^7} + \frac{329.25}{(1 + 0.20)^7}$$

$$= 4.00 \times 0.833 + 4.80 \times 0.694 + 5.76 \times 0.579 + 6.91 \times 0.482 + 8.22 \times 0.402 + 9.70 \times 0.335 + 11.35 \times 0.279 + 329.25 \times 0.279$$

(i) Intrinsic Value = ₹ 114.91

(ii) As Intrinsic Value of the share is higher than its selling price of ₹ 112, it is underpriced and can be acquired. However, other factors need to be taken into consideration since difference is only slightly higher.

Question – 53

SAM Ltd. has just paid a dividend of ₹ 2 per share and it is expected to grow @ 6% p.a. After paying dividend, the Board declared to take up a project by retaining the next three annual dividends. It is expected that this project is of same risk as the existing projects. The results of this project will start coming

from the 4th year onward from now. The dividends will then be ₹ 2.50 per share and will grow @ 7% p.a.

An investor has 1,000 shares in SAM Ltd. and wants a receipt of at least ₹ 2,000 p.a. from this investment.

Show that the market value of the share is affected by the decision of the Board. Also show as to how the investor can maintain his target receipt from the investment for first 3 years and improved income thereafter, given that the cost of capital of the firm is 8%.

(SM TYK – 16)

Solution:

Market Price (P_0)

(i) If not accept the project

$$\begin{aligned}P_0 &= \frac{D_1}{K_e - g} \\&= \frac{\text{₹ } 2 (1.06)}{0.08 - 0.06} \\&= \text{₹ } 106\end{aligned}$$

(ii) If accept the project

$$\begin{aligned}P_3 &= \frac{D_4}{K_e - g} \\&= \frac{\text{₹ } 2.50}{0.08 - 0.07} = \text{₹ } 250\end{aligned}$$

$$P_0 = \frac{\text{₹ } 250}{(1.08)^3} = \text{₹ } 198.46$$

Since value of share will increase hence accept the project.

If investor wants receipt of ₹ 2,000 p.a., then he should sell shares.

1st Year

$$P_1 = \frac{₹ 250}{(1.08)^2} = ₹ 214.33$$

$$\text{No. of shares} = \frac{₹ 2,000}{214.33} = 9.33 \text{ shares i.e. [10 shares]}$$

2nd Year

$$P_2 = \frac{₹ 250}{(1.08)^1} = ₹ 231.48$$

$$\text{No. of shares} = \frac{₹ 2,000}{₹ 231.48} = 8.64 \text{ shares i.e. [9 shares]}$$

3rd Year

$$P_3 = ₹ 250$$

$$\text{No. of shares} = \frac{₹ 2,000}{250} = 8 \text{ shares}$$

$$\begin{aligned} \text{Remaining shares} &= 1,000 - 10 - 9 - 8 \\ &= 973 \text{ shares} \end{aligned}$$

At the end of 3rd year, he would be having 973 shares valued @ ₹ 250 each i.e. ₹ 2,43,250. On these 973 shares, his dividend income for year 4 would be @ ₹ 2.50 i.e. ₹ 2,432.50.

So, if the project is taken up by the company, the investor would be able to maintain his receipt of at least ₹ 2,000 for first three years and would be getting increased income thereafter.

Question – 54

Piyush Loonker and Associates presently pay a dividend of Re. 1.00 per share and has a share price of ₹ 20.00.

- (i) If this dividend were expected to grow at a rate of 12% per annum forever, what is the firm's expected or required return on equity using a dividend-discount model approach?
- (ii) Instead of this situation in part (i), suppose that the dividends were expected to grow at a rate of 20% per annum for 5 years and 10% per year thereafter. Now what is the firm's expected, or required, return on equity?

Solution:

(1) Cost of Equity

$$\begin{aligned}
 K_e &= \frac{D_1}{P_0} + g \\
 &= \frac{1(1.12)}{20} + 0.12 \\
 &= 17.60\%
 \end{aligned}$$

(2) Required Rate of Return

Assume $K_e = 18\%$

$$\begin{aligned}
 P_0 &= \frac{1.20}{(1.18)^1} + \frac{1.440}{(1.18)^2} + \frac{1.728}{(1.18)^3} + \frac{2.074}{(1.18)^4} + \frac{2.488}{(1.18)^5} + \frac{2.488 (1.10)}{0.18-0.10} \times \\
 &\quad \frac{1}{(1.18)^5} \\
 &= ₹ 20.21
 \end{aligned}$$

Assume $K_e = 20\%$

$$\begin{aligned}
 P_0 &= \frac{1.20}{(1.20)^1} + \frac{1.440}{(1.20)^2} + \frac{1.728}{(1.20)^3} + \frac{2.074}{(1.20)^4} + \frac{2.488}{(1.20)^5} + \frac{2.488 (1.10)}{0.20-0.10} \times \\
 &\quad \frac{1}{(1.20)^5} \\
 &= ₹ 16.26
 \end{aligned}$$

18% 20.21.

20% 16.00

2% 4.21

$$\begin{aligned}
 K_e &= 18 + \left(\frac{2}{4.21} \right) \times 0.21 \\
 &= 18.10\%
 \end{aligned}$$

Question – 55

An investor is considering purchasing equity shares of Alpha Ltd., whose current Market price is ₹ 172.45. The company is proposing a dividend of ₹ 6 for the year ending 31st march, 2024. Alpha Ltd. is expected to grow @ 20 percent per annum for the next four years. Thereafter, the growth, over the next three years, will decline linearly by 100 basis points per annum. Thereafter, it will stabilize at a certain growth rate per annum infinitely. The required rate of return for the investor is 20%.

Dividend value is to be taken in 2 decimal points only.

You are required:

- (i) To calculate the stable growth rate of Alpha Ltd. after the end of 7 years.
- (ii) To advise whether it is worth to purchase the share at this price if the investor has a stable target growth rate of 15% per annum.

Period	1	2	3	4	5	6	7
PVIF (20%, n)	0.8333	0.6944	0.5787	0.4823	0.4019	0.3349	0.2791

(Exam May – 2023) (8 Marks)

Solution:

(i) Working Notes:

$$D_1 = ₹ 6$$

$$D_2 = 6 (1.20) = ₹ 7.20$$

$$D_3 = 6 (1.20)^2 = ₹ 8.64$$

$$D_4 = 6 (1.20)^3 = ₹ 10.37$$

$$D_5 = 10.37(1.19) = ₹ 12.34$$

$$D_6 = 10.37 (1.19) (1.18) = ₹ 14.56$$

$$D_7 = 10.37 (1.19) (1.18) (1.17) = ₹ 17.04$$

Price at the end of 7th year

Year	Dividend (₹)	PVF @ 20%	PV (₹)
1	6.00	0.8333	5.00
2	7.20	0.6944	5.00
3	8.64	0.5787	5.00
4	10.37	0.4823	5.00
5	12.34	0.4019	4.96
6	14.56	0.3349	4.88
7	17.04	0.2791	4.76
Total			34.60

Current Market Price	₹ 172.45
Less: PV of Dividends upto the year ending 7 th year	₹ 34.60
PV of Expected Market Price at the end of 7 th year	₹ 137.85

Let g be growth rate then: $137.85 = \frac{17.04 (1 + g)}{0.20 - g} \times 0.2791$

$g = 0.16$ i.e. 16%

Thus, the stable growth rate after the end of the 7 years shall be 16%.

- (ii) Since growth rate is more than target growth rate it is worth to purchase the share.**

BUY BACK DECISION

Question – 56

Rahul Ltd. has surplus cash of ₹ 100 lakhs and wants to distribute 27% of it to the shareholders. The company decides to buy back shares. The Finance Manager of the company estimates that its share price after re-purchase is likely to be 10% above the buyback price-if the buyback route is taken. The number of shares outstanding at present is 10 lakhs and the current EPS is ₹ 3.

You are required to determine:

- (i) The price at which the shares can be re-purchased, if the market capitalization of the company should be ₹ 210 lakhs after buyback,
- (ii) The number of shares that can be re-purchased, and
- (iii) The impact of share re-purchase on the EPS, assuming that net income is the same.

Solution:**(i) Amount Available For Dividend**

$$= ₹ 100 \text{ lakh} \times 27\%$$

$$= ₹ 27 \text{ lakh}$$

Let Assume buy back price be x

No. of shares \times MPS = Market Capitalization

$$\left(10 \text{ lakh} - \frac{27 \text{ lakh}}{x}\right) \times 1.10x = 210$$

$$11x - 29.70 = 210$$

$$x = ₹ 21.79$$

(ii) No. of Shares Bought Back

$$\text{No.} = \frac{27,00,000}{21.79} = 1,23,910 \text{ shares}$$

(iii) Impact on EPS Due to Buy Back

$$\text{EPS before buy back} = ₹ 3$$

$$\begin{aligned} \text{After buy back} &= \frac{₹ 30,00,000}{10,00,000 - 1,23,910} \\ &= ₹ 3.424 \end{aligned}$$

EPS increases to ₹ 3.424

Question – 57

Eager Ltd. has a market capitalization of ₹ 1,500 crores and the current market price of its share is ₹ 1,500. It made a PAT of 200 crores and the Board is considering a proposal to buy back 20% of the shares at a premium of 10% to the current market price. It plans to fund this through a 16% bank loan. You are required to calculate the post buy back Earnings Per Share (EPS). The company's corporate tax rate is 30%.

(MTP March – 2021)

Solution:

$$\begin{aligned}\text{No. of Shares} &= \frac{1,500 \text{ Cr.}}{1,500} \\ &= 1 \text{ Cr.} \\ \text{No. of shares buy back} &= 1 \text{ Cr.} \times 20\% \\ &= 0.20 \text{ Cr.} \\ \text{Buy Back Price} &= ₹ 1,500 \times 1.10 \\ &= ₹ 1,650 \\ \text{Amount of buy back} &= ₹ 1,650 \times 0.2 \text{ Cr.} \\ &= ₹ 330 \text{ Cr.} \\ \text{Interest} &= ₹ 330 \text{ Cr.} \times 16\% \\ &= 52.80 \text{ Cr.} \\ \text{Post Buy Back EPS} &= \frac{200 \text{ Cr.} - 52.80 (1 - 0.30)}{0.8 \text{ Cr.}} \\ &= ₹ 203.80\end{aligned}$$

Question – 58

High Growth Ltd. (HGL) was having an excellent growth over a number of years. The Board of Directors is considering a proposal to reward its shareholders by buying back 20% shares at a premium. The premium is to be paid by raising a loan from the Bank. The interest on loan is to be serviced by internal accruals as supported by the financials of HGL. The company has a market capitalization of ₹ 15,000 crore and the current Earnings Per Share (EPS) is ₹ 600 with a Price Earning Ratio (PER) of 25. The Board expects a post buy back Market Price per Share (MPS) of ₹ 10,000. The PER, post buy back will remain the same. The loan can be availed at an interest rate of 16% p.a.

Applicable corporate tax rate is 30%.

You are required to calculate:

- (i) The interest amount which can be paid for availing the bank loan.

- (ii) The loan amount to be raised.
- (iii) Buy back premium per share.

(Exam May – 2023) (10 Marks)

Solution:

(i) Interest Amount

$$\begin{aligned} \text{MPS before buy back} &= \text{EPS} \times \text{P/E} \\ &= 600 \times 25 = ₹ 15,000 \end{aligned}$$

No. of shares before buy back

$$\frac{₹ 15,000 \text{ Cr.}}{15,000} = 1 \text{ Cr.}$$

$$\text{No. of shares buy back} = 1 \text{ Cr.} \times 20\% = 0.2 \text{ Cr.}$$

$$\begin{aligned} \text{Post buy back EPS} &= \frac{\text{MPS}}{\text{P/E}} \\ &= \frac{10,000}{25} = 400 \end{aligned}$$

$$\begin{aligned} \text{PAT before buy back} &= \text{EPS} \times \text{No.} \\ &= 600 \times 1 \text{ Cr.} = ₹ 600 \text{ Cr.} \end{aligned}$$

Let assume interest amount be x

$$= \frac{600 - x (1 - 0.3)}{0.8} = 400 \text{ Cr.}$$

$$\text{Interest amount} = 400 \text{ Cr.}$$

(ii) Loan Amount = $\frac{400}{16\%} = ₹ 2,500 \text{ Cr.}$

(iii) Buy Back Premium per Share

$$\begin{aligned} \text{Premium per share} &= \frac{2,500 \text{ Cr.}}{0.2 \text{ Cr.}} \\ &= ₹ 12,500 \end{aligned}$$

Buy back price = 12,500 + 15,000 = 27,500

ICAI SOLUTION:

(i) The interest amount which can be paid for availing the bank loan

Current Market Price per Share = ₹ 600 × 25 = ₹ 15,000

$$\begin{aligned} \text{No. of Shares before Buyback} &= \frac{\text{Market Capitalization}}{\text{Market Price of Share}} \\ &= \frac{15,000 \text{ Crore}}{15,000} = 1 \text{ Crore} \end{aligned}$$

No. of Shares proposed to Buyback = 20% of 1 crore = 20 lakh

Total No. of Share after Buyback = 1 crore – 20 lakh = 80 lakh

Post Buy back Market Price per Share = ₹ 10,000

PE Ratio = 25

Post Buyback EPS = $\frac{10,000}{25} = ₹ 400$

EAT before Buyback = ₹ 600 × 1 crore = ₹ 600 crore

EBT before Buyback = $\frac{600}{(1 - 0.30)} = ₹ 857.1429 \text{ crore}$

EAT after Buyback = ₹ 400.00 × 80 lakh = ₹ 320 crore

EBT after Buyback = $\frac{320}{(1 - 0.30)} = ₹ 457.1429 \text{ crore}$

Interest which can be paid for availing bank loan:

EBT before Buyback ₹ 857.1429 crore

(-) EBT after Buyback ₹ 457.1429 crore

₹ 400.0000 crore

Alternatively, it can also be computed as follows:

Pre Buy back Market Capitalization (A)	₹ 15,000 crore
Pre Buy back EPS (B)	₹ 600
Pre Buy back PER (C)	25
Pre Buy back Market Price Per Share (₹ 600 × 5) D = B × C	₹15,000
Pre Buy back No. of Shares (A)/ (D)	1 Crore
Post Buy back EPS (A) (₹ 10,000/ 25)	₹ 400
Post Buy back No. of shares (B)	80 Lakh
Post Buy back Earning (C) = (A) × (B)	₹ 320 crore
Pre Buy back Earning 1 Crore × ₹ 600 (D)	₹ 600 crore
Post Tax Earning available for interest payment (D) – (C)	₹ 280 Crore
Pre- Tax amount of Interest $\frac{280 \text{ Crore}}{1 - 0.30}$	₹ 400 Crore

(ii) Loan Amount raised = $\frac{400 \text{ Crore}}{0.16} = ₹ 2,500 \text{ Crore}$

(iii) Buyback Premium per Share

Amount of Loan for Buyback of 20 % Shares = ₹ 2,500 crore

No. of Shares Buyback = 20 Lakh

Buyback price per Share = ₹ 2,500 Crore/ 20 Lakh = ₹ 12,500

Market Price after Buyback = ₹ 10,000

Buyback Premium Per Share = ₹ 12,500 – ₹ 10,000 = ₹ 2,500

Alternatively, it can also be computed as follows:

Amount of Loan (A)	₹ 2,500 crore
No. of Shares to be bought back (B)	20 Lakh
Price Per Share to be paid (C) = (A)/ (B)	₹ 12,500

Post Buy back Share Price (D)	₹ 10,000
Buy Back Premium per share (C) – (D)	₹ 2,500

VALUATION OF RIGHT

Question – 59

ABC Limited’s shares are currently selling at ₹ 13 per share. There are 10,00,000 shares outstanding. The firm is planning to raise ₹ 20 lakhs to Finance a new project.

Required:

What are the ex-right price of shares and the value of a right, if

- (i) The firm offers one right share for every two shares held.
- (ii) The firm offers one right share for every four shares held.
- (iii) How does the shareholders’ wealth change from (i) to (ii)? How does right issue increases shareholders’ wealth?

(SM TYK – 02)

Solution:

(i) One share for every 2 shares

$$\text{Right shares} = 10,00,000 \times \frac{1}{2} = 5,00,000 \text{ shares}$$

$$\text{Offer price} = \frac{\text{₹ } 2,00,00,000}{5,00,000} = \text{₹ } 4$$

$$\text{Ex-Right price} = \frac{(10,00,000 \times 13) + (5,00,000 \times 4)}{15,00,000} = \text{₹ } 10$$

$$\text{Value of right per shares} = 13 - 10 = 3$$

$$\text{Value of right} = 3 \times 2 = \text{₹ } 6$$

(ii) One share for every 4 shares

$$\text{One of shares} = 10,00,000 \times \frac{1}{4} = 2,50,000 \text{ shares}$$