

Security Valuation

Question 1:

Mr. A is holding 1000 shares of face value of ₹ 100 each of M/s. ABC Ltd. He wants to hold these shares for long term and have no intention to sell. On 1st January 2020, M/s XYZ Ltd. has made short sales of M/s. ABC Ltd.'s shares and approached Mr. A to lend his shares under Stock Lending Scheme with following terms:

- (i) Shares to be borrowed for 3 months from 01-01-2020 to 31-03-2020,**
- (ii) Lending Charges/Fees of 1% to be paid every month on the closing price of the stock quoted in Stock Exchange and**
- (iii) Bank Guarantee will be provided as collateral for the value as on 01-01-2020.**

Other Information:

- (a) Cost of Bank Guarantee is 8% per annum,**
- (b) On 29-02-2020 Dividend of 25% was declared.**

M/s ABC Ltd.'s share quoted in Stock Exchange on various dates are as follows:

Date	Share Price in Scenerio- 1: Bullish	Share Price in Scenerio- 1: Bearish
01-01-2020	1000	1000
31-01-2020	1020	980
29-02-2020	1040	960
31-03-2020	1050	940

You are required to find out:

- (i) Earning of Mr. A through Stock Lending Scheme in both the scenarios,**
- (ii) Total Earnings of Mr. A during 01-01-2020 to 31-03-2020 in both the scenarios,**
- (iii) What is the Profit or loss to M/s. XYZ by shorting the shares using through Stock Lending Scheme in both the scenarios?**

Answer:

Earnings of Mr. A through stock lending scheme

		Scenario 1	Scenario 2
(i)	Lending Fee		
	31-01-20 $1020 \times 1\%$ and $980 \times 1\%$	10.20	9.80
	29-02-20 $1040 \times 1\%$ and $960 \times 1\%$	10.40	9.60
	31-03-20 $1050 \times 1\%$ and $940 \times 1\%$	10.50	9.40
	Earnings from lending per Share (A)	31.10	28.80
	Total No. of Shares	1000	1000
	Total Earning from Lending	31,100	28,800
(ii)	Dividend income per Share (B)	25.00	25.00
	Total earnings per share (A) + (B)	56.10	53.80
	Total No. of Shares	1000	1000
	Total Earning	56,100	53,800
(iii)	Gain on shortening the shares (1,050 - 1,000) and (1,000 - 940)	(50.00)	60.00
	Lending fees paid	(31.10)	(28.80)
	Bank guarantee charges @ 8%	(20.00)	(20.00)
	Gain Per Share	(101.10)	11.20
	Total No. of Shares	1000	1000
	Total Gain on shortening the shares	(1,01,100)	11,200

Question 2:

Following is the information for the options free bond:

Face value of the bond	₹ 1,000
Coupon rate	7%
Terms of Maturity	7 years
Yield to Maturity	8%

You are required to calculate:

- (i) Market price of the bond and duration.
- (ii) If there is an increase in yield by 35 basis points, what would be the price of bond?

Present Value	t₁	t₂	t₃	t₄	t₅	t₆	t₇
PVIF_{0.07, t}	0.935	0.874	0.817	0.764	0.714	0.667	0.623
PVIF_{0.08, t}	0.926	0.857	0.794	0.735	0.681	0.631	0.584

Answer:

(i)

1. Market price and duration of Bond
= 70 (PVIAF 8%,7) + 1,000 (PVIF 8%,7)
= 70 (5.208) + 1,000 (0.584)
= 364.56 + 584.00
= 948.56

2. Duration of Bond

Period (A)	Cash flow (₹) (B)	PVF@ 8% (C)	PV (₹) (D) = (B) × (C)	(E) = (A) × (D)
1	70	0.926	64.82	64.82
2	70	0.857	59.99	119.98
3	70	0.794	55.58	166.74
4	70	0.735	51.45	205.80
5	70	0.681	47.67	238.35
6	70	0.631	44.17	265.02
7	1070	0.584	624.88	4374.16
			948.56	5434.87

Duration of the Bond is $= \frac{15434.87}{948.56} = 5.73$ years

(ii) Price of Bond if increase in yield by 35 basis points

Period	Cash flow	PVF@ 8.35%	PV (₹)
1	70	0.923	64.61
2	70	0.852	59.64
3	70	0.786	55.02
4	70	0.726	50.82
5	70	0.670	46.90
6	70	0.618	43.26
7	1070	0.570	609.90
			930.15

Alternatively, if the same increase in yield is linked with duration as computed in sub part (i), then answer will be computed as follows:

$$\text{Volatility of Bond} = \frac{\text{Duration}}{1+\text{YTM}} = \frac{5.73}{1+.008} = 5.306$$

The expected market price if increase in yield is by 35 basis points.

$$= ₹ 948.56 \times 0.35 (5.306/100) = ₹ 17.62$$

Hence expected market price is ₹ 948.56 – ₹ 17.62 = ₹ 930.94

Hence, the market price will decrease with increase in the yield.

Market price based on YTM, Duration & Volatility

Question 32). The following data are available for a bond

Face value	₹ 1,000
Coupon Rate	16%
Years to Maturity	6
Redemption value	₹ 1,000
Yield to maturity	17%

What is the current market price, duration and volatility of this bond? Calculate the expected market price, if increase in required yield is by 75 basis points.

[Similar Extra Questions for practice Q No. 8]

Answer: -

1. Calculation of Market price:

$$\text{YTM} = \frac{\text{Coupon Interest} + \frac{(\text{Discount or premium})}{\text{Years Left}}}{\frac{\text{Face Value} + \text{Market Value}}{2}}$$

Discount or premium – YTM is more than coupon rate, market price is less than Face Value i.e. at discount.

Let x be the market price

$$0.17 = \frac{160 + \frac{(1000 - x)}{6}}{\frac{1,000 + x}{2}}$$

$$x = ₹ 960.26$$

Alternatively, the candidate may attempt by

$$\begin{aligned} &= 160 (\text{PVIAF } 17\%, 6) + 1,000 (\text{PVIF } 17\%, 6) \\ &= 160 (3.589) + 1,000 (0.390) = 574.24 + 390 \\ &= 964.24 \end{aligned}$$

2. Duration

Year	Cash flow	P.V. @ 17%		Proportion of bond value	Proportion of bond value × time (years)
1	160	.855	136.80	0.142	0.142
2	160	.731	116.96	0.121	0.246
3	160	.624	99.84	0.103	0.309
4	160	.534	85.44	0.089	0.356
5	160	.456	72.96	0.076	0.380
6	1160	.390	<u>452.40</u>	<u>0.469</u>	<u>2.814</u>
			<u>964.40</u>	<u>1.000</u>	<u>4.247</u>

Duration of the Bond is 4.247 years

Alternatively, as per Short Cut Method

$$D = \frac{1 + YTM}{YTM} - \frac{(1 + YTM)^t (c - YTM)}{c [(1 + YTM)^t - 1] + YTM}$$

Where YTM = Yield to Maturity
c = Coupon Rate
t = Years to Maturity

$$= \frac{1.17}{0.17} - \frac{1.17 + 6 (0.16 - 0.17)}{0.16 [(1.17)^6 - 1] + 0.17}$$

D = 4.24 years

3. Volatility

$$\text{Volatility of the bonds} = \frac{\text{Duration}}{(1 + \text{YTM})} = \frac{4.247}{1.17} = 3.63$$

$$\text{or} = \frac{4.2422}{1.17} = 3.6258$$

It means with change of 100 basis points i.e. 1% of YTM Market price change by 3.6258 inversely

4. The expected market price if increase in required yield is by 75 basis points.

$$\begin{aligned} &= ₹ 960.26 \times .75 (3.63/100) \\ &= ₹ 26.142 \end{aligned}$$

Hence expected market price is ₹ 960.26 – ₹ 26.142 = ₹ 934.118

Hence, the market price will decrease

This portion can also be alternatively done as follows

$$\begin{aligned} &= ₹ 964.40 \times .75 (3.63/100) \\ &= ₹ 26.26 \end{aligned}$$

Then the market price will be

$$\begin{aligned} &= ₹ 964.40 – 26.26 \\ &= ₹ 938.14 \end{aligned}$$

Portfolio Management

Question 3:

Mr. A is having 1 lakh shares of K Ltd. The beta of the company is 1.40. Mr. B a financial advisor has suggested having the following portfolio:

Security	Beta	% holding
L	1.2	10
M	0.75	10
N	0.40	30
O	1.4	50
		100

Market Return is 12%

Risk free rate is 8%

You. Are required to calculate the following for the present investment and suggested portfolio:

(i) What is the expected return based on CAPM and also

- (1) If the market goes up by 2.5%.
- (2) If the market goes down by 2.5%.
- (3) If the market is giving a negative return of 2.5%.

(ii) If the probability of market giving negative return is more, please advise Mr. A whether to continue the holdings of M/s. K Ltd. or to buy the portfolio as per the suggestion of Mr. B. If so, why?

Answer:

Working Notes –

Calculation of Portfolio Beta suggested by Mr. B

Security	Beta	Wt. of Holding	Beta \times Wt. of Holding
L	1.2	0.1	0.120
M	0.75	0.1	0.075
N	0.4	0.3	0.120
O	1.4	0.5	0.700
Total		1.0	1.015

Portfolio Beta is 1.015

Calculation of Expected Return based on CAPM at present situation-

Particulars	Risk Free Rate (R_f)	Beta	Market Return	Risk Premium = $R_m - R_f$	Beta \times Risk Premium	Expected Return
a	b	c	d	$e = d - b$	$f = c \times e$	$g = b + f$
K Ltd.	8	1.400	12	4	5.600	13.60
Portfolio	8	1.015	12	4	4.060	12.06

(i)

(1) Calculation of Expected Return based on CAPM if market goes up by 2.5%:

Particulars	Risk Free Rate (R_f)	Beta	Market Return	Risk Premium $=R_m - R_f$	Beta \times Risk Premium	Expected Return
a	b	c	d	$e = d - b$	$f = c \times e$	$g = b + f$
K Ltd.	8	1.400	14.5	6.5	9.100	17.10
Portfolio	8	1.015	14.5	6.5	6.598	14.60

(2) Calculation of Expected Return based on CAPM if market goes up by 2.5%:

Particulars	Risk Free Rate (R_f)	Beta	Market Return	Risk Premium $=R_m - R_f$	Beta \times Risk Premium	Expected Return
a	b	c	d	$e = d - b$	$f = c \times e$	$g = b + f$
K Ltd.	8	1.400	9.5	1.5	2.100	10.10
Portfolio	8	1.015	9.5	1.5	1.523	9.52

(3) Calculation of Expected Return based on CAPM if market gives negative returns of 2.5% -

Particulars	Risk Free Rate (R_f)	Beta	Market Return	Risk Premium $=R_m - R_f$	Beta \times Risk Premium	Expected Return
a	b	c	d	$e = d - b$	$f = c \times e$	$g = b + f$
K Ltd.	8	1.400	-2.5	-10.5	-14.700	-6.70
Portfolio	8	1.015	-2.5	-10.5	-10.658	-2.66

(ii) If the probability of market giving negative return is more, it is advisable to Mr. A to buy the portfolio suggested by Mr. B because Beta of the portfolio is less than of K Ltd.

Question 4:

Mayuri is interested to construct a Portfolio of Securities X and Y. She has collected the following information:

	X	Y
Expected Return (ER)	19%	23%
Risk (σ)	14%	18%

Mayuri has 5 Portfolio options of X and Y as follows:

- (i) 50% of funds in each X and Y**
- (ii) 75% of funds in X and 25% in Y**
- (iii) 25% of funds in X and 75% in Y**
- (iv) 60% of funds in X and 40% in Y**
- (v) 35% of funds in X and 65% in Y**

Suppose if Co-efficient of correlation (r) between X and Y is 0.16, you are required to calculate:

- (i) Expected Return under different Portfolio Options.**
- (ii) Risk Factor associated with these Portfolio Options.**
- (iii) Which Portfolio is best from the point of view of Risk?**
- (iv) Which Portfolio is best from the point of view of Return?**

Answer: -

Two asset portfolio

$$\sigma_p^2 = w_1^2 \sigma_1^2 + w_2^2 \sigma_2^2 + 2 w_1 w_2 \sigma_1 \sigma_2 r_{12}$$

Substituting the respective values we get,

(i) 50% of funds in each of X & Y

$$E_p = 0.50 \times 19\% + 0.50 \times 23\% = 21\%$$

$$\sigma_p^2 = (0.50)^2 (14\%)^2 + (0.50)^2 (18\%)^2 + 2(0.50)(0.50)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 49 + 81 + 20.16 = 150.16$$

$$\sigma_p = 12.25\%$$

(ii) 75% in X and 25% in Y

$$E_p = 0.75 \times 19\% + 0.25 \times 23\% = 20\%$$

$$\sigma_p^2 = (0.75)^2 (14\%)^2 + (0.25)^2 (18\%)^2 + 2(0.75)(0.25)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 110.25 + 20.25 + 15.12 = 145.62$$

$$\sigma_p = 12.07\%$$

(iii) 25% in X and 75% in Y

$$E_p = 0.25 \times 19\% + 0.75 \times 23\% = 22\%$$

$$\sigma_p^2 = (0.25)^2 (14\%)^2 + (0.75)^2 (18\%)^2 + 2(0.25)(0.75)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 12.25 + 182.25 + 15.12 = 209.62$$

$$\sigma_p = 14.48\%$$

(iv) 60% in X and 40% in Y

$$E_p = 0.60 \times 19\% + 0.40 \times 23\% = 20.6\%$$

$$\sigma_p^2 = (0.60)^2 (14\%)^2 + (0.40)^2 (18\%)^2 + 2(0.60)(0.40)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 70.56 + 51.84 + 19.35 = 141.75$$

$$\sigma_p = 11.91\%$$

(v) 35% in X and 65% in Y

$$E_p = 0.35 \times 19\% + 0.65 \times 23\% = 21.60\%$$

$$\sigma_p^2 = (0.35)^2 (14\%)^2 + (0.65)^2 (18\%)^2 + 2(0.35)(0.65)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 24.01 + 136.89 + 18.35 = 179.25$$

$$\sigma_p = 13.39\%$$

Portfolio	(i)	(ii)	(iii)	(iv)	(v)
Return	21	20	22	20.60	21.60
σ	12.25	12.07	14.48	11.91	13.39

In the terms of return, we see that portfolio (iii) is the best portfolio.

In terms of risk, we see that portfolio (iv) is the best portfolio.

Similar to question 15

Portfolio Risk & Return

Question 6). M is interested to construct a Portfolio of Securities A and B. He has collected the following information:

	A	B
Expected Return (ER)	19%	23%
Risk (σ)	14%	18%

M has 4 Portfolio options of A and B as follows:

- (i) 50% of funds in each A and B**
- (ii) 75% of funds in A and 25% in B**
- (iii) 25% of funds in A and 75% in B**
- (iv) 60% of funds in A and 40% in B**

Co-efficient of correlation (r) between A and B is 0.16.

You are required to calculate:

- (i) Expected Return under different Portfolio Options.**
- (ii) Risk Factor associated with these Portfolio Options.**
- (iii) Which Portfolio is best from the point of view of Risk?**
- (iv) Which Portfolio is best from the point of view of Return?**

[MTP Oct'21] (10 marks)

Answer: -

Two asset portfolio

$$\sigma_p^2 = w_1^2 \sigma_1^2 + w_2^2 \sigma_2^2 + 2 w_1 w_2 \sigma_1 \sigma_2 r_{12}$$

Substituting the respective values we get,

(i) 50% of funds in each of A & B

$$E_p = 0.50 \times 19\% + 0.50 \times 23\% = 21\%$$

$$\sigma_p^2 = (0.50)^2 (14\%)^2 + (0.50)^2 (18\%)^2 + 2 (0.50)(0.50)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 49 + 81 + 20.16 = 150.16$$

$$\sigma_p = 12.25\%$$

(ii) 75% in A and 25% in B

$$E_p = 0.75\% \times 19\% + 0.25\% \times 23 = 14\%$$

$$\sigma_p^2 = (0.75)^2 (14\%)^2 + (0.25)^2 (18\%)^2 + 2(0.75)(0.25)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 110.25 + 20.25 + 15.12 = 145.62$$

$$\sigma_p = 12.07\%$$

(iii) 25% in A and 75% in B

$$E_p = 0.25\% \times 19\% + 0.75\% \times 23 = 14\%$$

$$\sigma_p^2 = (0.25)^2 (14\%)^2 + (0.75)^2 (18\%)^2 + 2(0.25)(0.75)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 12.25 + 182.25 + 15.12 = 209.62$$

$$\sigma_p = 14.48\%$$

(iv) 60% in A and 40% in B

$$E_p = 0.60\% \times 19\% + 0.40\% \times 23 = 14\%$$

$$\sigma_p^2 = (0.60)^2 (14\%)^2 + (0.40)^2 (18\%)^2 + 2(0.60)(0.40)(0.16)(14\%)(18\%)$$

$$\sigma_p^2 = 70.56 + 51.84 + 19.35 = 141.75$$

$$\sigma_p = 11.91\%$$

Portfolio	(i)	(ii)	(iii)	(iv)
Return	21	20	22	20.6
σ	12.25	12.07	14.48	11.91

In the terms of return, we see that portfolio (iii) is the best portfolio.

In terms of risk we see that portfolio (iv) is the best portfolio.

Mutual Funds

Question 5:

On 1st April, an open-ended scheme of mutual fund had 400 lakh units outstanding with Net Assets Value (NAV) of ₹19. At the end of April, it issued 5 lakh units at an opening NAV plus 2% load, adjusted for dividend equalization. At the end of May, 4 Lakh units were repurchased at the opening NAV less 2% exit load adjusted for dividend equalization. At the end of June, 60% of its available income was distributed. In respect of April-June quarter, the following additional information is available:

Particulars	₹ in Lakhs
Portfolio value appreciation	515.67
Income of April	31.960
Income of May	46.125
Income for June	58.470

You are required to calculate:

- (i) Income available for distribution;**
- (ii) Issue price at the end of April;**
- (iii) Repurchase price at the end of May; and**
- (iv) Net Asset Value (NAV) as on 30th June.**

Answer: -

(i) Calculation of Income Available for Distribution

	Units (Lakh)	Per Unit (₹)	Total (₹ In lakh)
Income from April	400	0.0799	31.960
Add: Dividend equalization collected on issue	5	0.0799	0.3995
	405	0.0799	32.3595
Add: Income from May		0.1139	46.125
	405	0.1938	78.4845
Less: Dividend equalization paid on repurchase	4	0.1938	(0.7752)
	401	0.1938	77.7093
Add: Income from June		0.1458	58.470
	401	0.3396	136.1793
Less: Dividend Paid		0.2038	(81.7076)
	401	0.1358	54.4717

(ii) Calculation of Issue Price at the end of April

	₹
Opening NAV	19.00000
Add: Entry Load 2% of ₹ 19	0.38000
	19.38000
Add: Dividend Equalization collected on Issue Price	0.07999
	19.45999
	OR 19.46

(iii) Calculation of Repurchase Price at the end of May

	₹
Opening NAV	19.0000
Less: Exit Load 2% of ₹ 19	(0.3800)
	18.6200
Add: Dividend Equalization paid on Issue Price	0.1938
	18.8138

(iv) Closing NAV at the end on 30th June

		₹ (Lakh)
Opening Net Asset Value (₹ 19 × 400)		7600.0000
Portfolio Value Appreciation		515.6700
Issue of Fresh Units (5 × 19.46)		97.3000
Income Received (31.96 + 46.125 + 58.470)		136.5550
		8349.5250
Less: Units repurchased (4 × 18.8138)	75.2552	
Income Distributed	81.7076	156.9628
Closing Net Asset Value		8192.5622
Closing Units (400 + 5 – 4) lakh		401 lakhs
Closing NAV as on 30 th June		₹ 20.4303

Issue & Repurchase price & NAV under Dividend Equalization

Question 19). On 1st April, an open ended scheme of mutual fund had 300 lakh units outstanding with Net Assets Value (NAV) of ₹ 18.75. At the end of April, it issued 6 lakh units at opening NAV plus 2% load, adjusted for dividend equalization. At the end of May, 3 Lakh units were repurchased at opening NAV less 2% exit load adjusted for dividend equalization. At the end of June, 70% of its available income was distributed.

In respect of April-June quarter, the following additional information are available:

	₹ in lakh
Portfolio value appreciation	425.47
Income of April	22.950
Income for May	34.425
Income for June	45.450

You are required to calculate

- (i) Income available for distribution;
- (ii) Issue price at the end of April;
- (iii) repurchase price at the end of May; and
- (iv) net asset value (NAV) as on 30th June.

[MTP Aug'18, MTP Apr'19] (8-10 Marks)

[Similar Extra Questions for practice Q No. 12]

Answer: -

Calculation of Income available for Distribution

	Units (Lakh)	Per Unit (₹)	Total (₹ In lakh)
Income from April	300	0.0765	22.9500
Add: Dividend equalization collected on issue	6	0.0765	0.4590
	306	0.0765	23.4090
Add: Income from May		0.1125	34.4250
	306	0.1890	57.8340
Less: Dividend equalization paid on repurchase	3	0.1890	(0.5670)
	303	0.1890	57.2670
Add: Income from June		0.1500	45.4500
	303	0.3390	102.7170
Less: Dividend Paid		0.2373	(71.9019)
	303	0.1017	30.8151

Calculation of Issue Price at the end of April

	₹
Opening NAV	18.750
Add: Entry Load 2% of ₹ 18.750	0.375
	19.125
Add: Dividend Equalization paid on Issue Price	0.0765
	19.2015

Calculation of Repurchase Price at the end of May

	₹
Opening NAV	18.750
Less: Exit Load 2% of ₹ 18.750	(0.375)
	18.375
Add: Dividend Equalization paid on Issue Price	0.1890
	18.564

Closing NAV

		₹ (Lakh)
Opening Net Asset Value (₹ 18.75 × 300)		5625.0000
Portfolio Value Appreciation		425.4700
Issue of Fresh Units (6 × 19.2015)		115.2090
Income Received (22.950 + 34.425 + 45.450)		102.8250
		6268.504
Less: Units repurchased (3 × 18.564)	-55.692	
Income Distributed	-71.909	(-127.5939)
Closing Net Asset Value		6140.9101
Closing Units (300 + 6 – 3) lakh		303 lakh
∴ Closing NAV as on 30 th June		₹ 20.2670

Derivatives

Question 6:

Mr. P established the following spread on the Coastal Corporation's stock:

- (i) Purchased one 3-month call option with a premium of ₹ 6.5 and an Exercise price of ₹ 110.**
- (ii) Purchased one 3-month put option with a premium of ₹ 10 and an Exercise price of ₹ 90.**

Coastal Corporation's stock is currently selling at ₹ 100. Determine profit or loss, if the price of Coastal Corporation's stock:

- (i) Remains at ₹ 100 after 3 months.**
- (ii) Falls at ₹ 70 after 3 months.**
- (iii) Rises to ₹ 138 after 3 months.**

Assume the size of option is 1,000 shares of Coastal Corporation.

Answer:

- (i) Total premium paid on purchasing a call and put option
= (₹ 6.50 per share × 1000) + (₹ 10 per share × 1000).
= ₹ 6,500 + ₹ 10,000 = ₹ 16,500

In this case, Mr. P exercises neither the call option nor the put option as both will result in a loss for him.

Ending value = - ₹ 16,500 + zero gain = - ₹ 16,500
i.e. Net loss = ₹ 16,500

- (ii) Since the price of the stock is below the exercise price of the call, the call will not be exercised. Only put is valuable and is exercised.

Total premium paid = ₹ 16,500

Ending value = - ₹ 16,500 + ₹ [(90 - 70) × 1000]
= - ₹ 16,500 + ₹ 20,000 = ₹ 3,500

∴ Net gain = ₹ 3,500

- (iii) In this situation, the put is worthless, since the price of the stock exceeds the put's exercise price. Only call option is valuable and is exercised.

Total premium paid = ₹ 16,500

Ending value = - ₹ 16,500 + ₹ [(138 - 110) × 1000]

∴ Net Gain = - ₹ 16,500 + ₹ 28,000 = ₹ 11,500

Net Profit/Loss on Call & Put options

Question 23). Mr. X established the following strategy on the Delta Corporation's stock:

- (1) Purchased one 3-month call option with a premium of ₹ 30 and an exercise price of ₹ 550.**
- (2) Purchased one 3-month put option with a premium of ₹ 5 and an exercise price of ₹ 450.**

Delta Corporation's stock is currently selling at ₹ 500. Determine profit or loss, if the price of Delta Corporation's :

- (i) remains at ₹ 500 after 3 months.**
- (ii) falls at ₹ 350 after 3 months.**
- (iii) rises to ₹ 600.**

Assume the option size is 100 shares of Delta Corporation.

[Similar Extra Questions for practice Q No. 6]

Answer: -

(i) Total premium paid on purchasing a call and put option

$$= (\text{₹ } 30 \text{ per share} \times 100) + (\text{₹ } 5 \text{ per share} \times 100).$$

$$= 3,000 + 500 = \text{₹ } 3,500$$

In this case, X exercises neither the call option nor the put option as both will result in a loss for him.

$$\text{Ending value} = - \text{₹ } 3,500 + \text{zero gain} = - \text{₹ } 3,500$$

$$\text{i.e Net loss} = \text{₹ } 3,500$$

(ii) Since the price of the stock is below the exercise price of the call, the call will not be exercised. Only put is valuable and is exercised.

$$\text{Total premium paid} = \text{₹ } 3,500$$

$$\text{Ending value} = - \text{₹ } 3,500 + \text{₹ } [(450 - 350) \times 100]$$

$$= - \text{₹ } 3,500 + \text{₹ } 10,000 = \text{₹ } 6,500$$

$$\therefore \text{Net gain} = \text{₹ } 6,500$$

(iii) In this situation, the put is worthless, since the price of the stock exceeds the put's exercise price. Only call option is valuable and is exercised.

$$\text{Total premium paid} = \text{₹ } 3,500$$

$$\text{Ending value} = -3,500 + [(600 - 550) \times 100]$$

$$\therefore \text{Net Gain} = -3,500 + 5,000 = \text{₹ } 1,500$$

Question 7:

Following information is available for consideration:

BSE Index	25,000
Value of portfolio	₹ 50,50,000
Risk free interest rate	9% p.a.
Dividend yield on Index	6% p.a.
Beta of portfolio	1.5

We assume that a future contract on the BSE index with 4 months maturity is used to hedge the value of portfolio over next 3 months. One future contract is for delivery of 50 times the index.

Based on the above information calculate:

- (i) Price of future contract.**
- (ii) Gain on short futures position if index turns out to be 22,500 in 3 months.**

Note: Daily compounding (exponential) formula is not required to be used.

Answer:

(i) Current future price of the index

$$= 25000 + 25000 (0.09 - 0.06) \frac{4}{12}$$

$$= 25000 + 250 = 25250$$

$$\therefore \text{Price of the future contract} = ₹ 50 \times 25,250$$

$$= ₹ 12,62,500$$

(ii) Hedge Ratio = $\frac{5050000}{1262500} \times 1.5 = 12,62,500$

$$= 6 \text{ contracts}$$

Index after three months turns out to be 22500

Future price will be

$$= 22500 + 22500 (0.09 - 0.06) \times \frac{1}{12} = 22556.25$$

Therefore, Gain from the short futures position is

$$= 6 \times (25250 - 22556.25) \times 50$$

$$= ₹ 8,08,125$$

Price of Future & Gain on short futures

Question 5).

BSE	5000
Value of portfolio	₹ 10,10,000
Risk free interest rate	9% p.a.
Dividend yield on Index	6% p.a.
Beta of portfolio	1.5

We assume that a future contract on the BSE index with four months maturity is used to hedge the value of portfolio over next three months. One future contract is for delivery of 50 times the index.

Based on the above information calculate:

- (i) Price of future contract.
- (ii) The gain on short futures position if index turns out to be 4,500 in three months.

[Similar Extra Questions for practice Q No. 1]

Answer: -

(i) Current future price of the index

$$= \text{spot price} + [\text{spot price} (R_f - \text{Dividend rate}) t]$$

$$= 5000 + 5000 (0.09 - 0.06) \frac{4}{12} = 5000 + 50 = 5,050$$

$$\therefore \text{Price of the future contract} = ₹ 50 \times 5,050 = ₹ 2,52,500$$

$$(ii) \text{ Hedge ratio} = \frac{\text{Desired value of portfolio} \times \beta}{\text{Index future spot price} \times \text{No. of units per contract}}$$

$$= \frac{1010000}{252500} \times 1.5$$

$$= 6 \text{ contracts}$$

Index after three months turns out to be 4500

$$\text{Future price will be} = 4500 + 4500 (0.09 - 0.06) \times \frac{1}{12} = 4,511.25$$

Therefore, Gain from the short futures position is

$$= 6 \times (5050 - 4511.25) \times 50$$

$$= ₹ 1,61,625$$

Note: Alternatively, we can also use daily compounding (exponential) formula.

$$\text{Future price} = \text{Spot Price} \times e^{(r-d) t}$$

Forex

Question 8:

A US investor chose to invest in Sensex for a period of one year. The relevant information is given below.

Size of investment (\$)	20,00,000
Spot rate 1 year ago (₹/\$)	42.50/60
Spot rate now (₹/\$)	43.85/90
Sensex 1 year ago	3,256
Senex now	3,765
Inflation in US	5%
Inflation in India	9%

- (i) Compute the nominal rate of return to the US investor.**
- (ii) Compute the real depreciation / appreciation of Rupee.**
- (iii) What should be the exchange rate if relevant purchasing power parity holds good?**
- (iv) What will be the real return to an Indian investor in Sensex?**

Answer:

(i)

Size of investment (\$)	20,00,000
Size of investment (₹) (\$ 20,00,000 × 42.50)	8,50,00,000
Sensex at T ₀	3,256
No. of units of Sensex that can be purchased at to (₹ 8,50,00,000 / 3,256)	26,105
Sensex at T ₁	3,765
Sale of Sensex (26,105 × 3,765)	9,82,85,325
US\$ at T ₁	₹ 43.90
Equivalent Amount in US\$	22,38,846
Gain in US\$ [22,38,846 – 20,00,000]	2,38,846
Nominal rate to US investor	11.94%

(ii) Real Appreciation/Depreciation of Rupee

$$\text{Real Exchange Rate (Buying)} = 43.85 \times \frac{(1+0.05)}{(1+0.09)} = 42.24$$

$$\text{Real Appreciation of ₹} = \frac{42.50 - 42.24}{42.50} \times 100 = 0.61\%$$

(iii) Exchange rate if relevant purchasing power parity holds

$$\text{Buying Rate} = 42.50 \times \frac{(1+0.09)}{(1+0.05)} = 44.12$$

$$\text{Selling Rate} = 42.60 \times \frac{(1+0.09)}{(1+0.05)} = 44.22$$

$$\text{Exchange rate} = 44.12/44.22$$

(iv) Real return to Indian Investor in Sensex

$$\text{Nominal Return} = \frac{3765 - 3256}{3256} \times 100 = 15.63\%$$

$$\text{Real Return} = \frac{1.1563}{1.09} - 1 = 0.0608 \text{ or } 6.08 \%$$

Question 9:

Mr. Mammen, an Indian investor invests in a listed bond in USA. If the price of the bond at the beginning of the year is USD 100 and it is USD 103 at the end of the year. The coupon rate is 3% payable annually.

Find the return on investment in terms of home country currency if:

- (i) USD is Flat.**
- (ii) USD appreciates during the year by 3%.**
- (iii) USD depreciates during the year by 3%.**
- (iv) Indian Rupee appreciates during the year by 5%.**
- (v) Will your answer differ if Mr. Mammen invests in the bond just before the interest payable.**

Answer:

(i) If USD is flat

$$\text{Return} = \frac{(\text{Price at end} - \text{Price at beginning}) + \text{Interest}}{\text{Price at beginning}}$$

$$= \frac{(103 - 100) + 3}{100}$$

$$= \frac{3+3}{100} = 0.06 \text{ say } 6\%$$

(ii) If USD appreciates by 3%

$$(1+0.06)(1+0.03) - 1 = 1.06 \times 1.03 - 1 = 0.0918$$

i.e., 9.18%

(iii) If USD depreciates by 3%

$$(1+0.06)(1-0.03) - 1 = 1.06 \times 0.97 - 1 = 0.0282$$

i.e., 2.82%

(iv) If Indian Rupee is appreciated by 5%

$$(1+0.06)(1-0.05) - 1 = 1.06 \times 0.95 - 1 = 0.007$$

i.e., 0.7%.

(v) No, our answer will not differ even if Mr. Mammen invests in bond just before the interest is payable.

International Financial Management

Question 10:

M/s. Raghu Ltd. is interested in expanding its operation and planning to install manufacturing plant at US. It requires 8.82 million USD (net of issue expenses/ floatation cost) to fund the proposed project. GDRs are proposed to be issued to finance this project. The estimated floatation cost of GDRs is 2%.

Additional information:

- (i) Expected market price of share at the time of issue of GDR is ₹ 360 (Face Value ₹ 100)**
- (ii) Each GDR will represent two underlying Shares.**
- (iii) The issue shall be priced at 10% discount to the market price.**
- (iv) Expected exchange rate is INR/USD 72.**
- (v) Dividend is expected to be paid at the rate of 20% with growth rate of 12%.**

(1) You, as a financial consultant, are required to compute the number of GDRs to be issued and cost of the GDR.

(2) What is your suggestion if the company receives an offer from a US Bank willing to provide an equivalent loan with an interest rate of 12%?

(3) How much company can save by choosing the option as recommended by you?

Answer:

Net Issue Size = \$ 8.82 million

$$\text{Gross Issue} = \frac{8.82}{0.98} = \$ 9.00 \text{ million}$$

Issue Price per GDR in ₹ (360 × 2 × 90%)	₹ 648
Issue Price per GDR in \$ (₹ 648/ ₹ 72)	\$ 9.00
Dividend Per GDR (D1) = ₹ 20 × 2 =	₹ 40
Net Proceeds Per GDR = ₹ 648 × 0.98 =	₹ 635.04

(1) (a) Number of GDR to be issued

$$= \frac{\$ 9.00 \text{ million}}{\$ 9} = 1.00 \text{ million}$$

(b) Cost of GDR

$$K_e = \frac{40.00}{635.04} + 0.12 = 18.30\%$$

(2) If the company receives an offer from US Bank willing to provide an equivalent amount of loan with interest rate of 12%, it should accept the offer.

(3) If the offer is accepted there will be net saving of 6.30%.

Similar to Illustration 4

Number & Cost of GDR to be issued

Question 1).

Odessa Limited has proposed to expand its operations for which it requires funds of \$ 15 million, net of issue expenses which amount to 2% of the issue size. It proposed to raise the funds through a GDR issue. It considers the following factors in pricing the issue:

- (i) The expected domestic market price of the share is ₹ 300.
- (ii) 3 shares (having face value of ₹ 10 each) underly each GDR.
- (iii) Underlying shares are priced at 10% discount to the market price.
- (iv) Expected exchange rate is ₹ 60/\$.

You are required to compute the number of GDR's to be issued and cost of GDR to Odessa Limited, if 20% dividend is expected to be paid with a growth rate of 20%.

[MTP Apr'21, MTP Mar'18, MTP Apr'18] (4-8 marks)

Answer: -

Net Issue Size = \$15 million

$$\text{Gross Issue} = \frac{\$15 \text{ million}}{0.98} = \$ 15.306 \text{ million}$$

Issue Price per GDR in ₹ ($300 \times 3 \times 90\%$) = ₹ 810

Issue Price per GDR in \$ ($\text{₹ } 810 / \text{₹ } 60$) = \$ 13.50

Dividend Per GDR (D_1) = ₹ 2×3 = ₹ 6

Net Proceeds Per GDR = ₹ 810×0.98 = ₹ 793.80

(1) Number of GDR to be issued

$$\frac{\$15.306 \text{ million}}{\$13.50} = 1.1338 \text{ million}$$

(2) Cost of GDR to Odessa Ltd.

$$k_e = \frac{6.00}{793.80} + 0.20 = 20.76\%$$

Interest Rate Risk Management

Question 11:

A textile manufacturer has taken floating interest rate loan of ₹ 40,00,000 on 1st April, 2012. The rate of interest at the inception of loan is 8.5% p.a. interest is to be paid every year on 31st March, and the duration of loan is four years.

- (i) Suppose in the month of October 2012, the Central bank of the country releases following projections about the interest rates likely to prevail in future.

Date	Rate of Interest
On 31st March, 2013	8.75%
On 31st March, 2014	10.00%
On 31st March, 2015	10.50%
On 31st March, 2016	7.75%

Show how borrower can hedge the risk arising out of expected rise in the rate of interest when he wants to peg his interest cost at 8.50% p.a.

- (ii) Assume that the premium negotiated by both the parties is 0.75% to be paid on 1st October, 2012 and the actual rate of interest on the respective due dates happens to be as follows:

Date	Rate of Interest
On 31st March, 2013	10.20%
On 31st March, 2014	11.50%
On 31st March, 2015	9.25%
On 31st March, 2016	8.25%

Show how the settlement will be executed on the perspective interest due dates.

Answer:

As borrower does not want to pay more than 8.5% p.a., on this loan where the rate of interest is likely to rise beyond this, hence, he has to hedge the risk by entering into an agreement to buy interest rate caps with the following parameters:

- National Principal: ₹ 40,00,000/-
- Strike rate: 8.5% p.a.
- Reference rate: the rate of interest applicable to this loan
- Calculation and settlement date: 31st March every year
- Duration of the caps: till 31st March 2016
- Premium for caps: negotiable between both the parties

To purchase the caps this borrower is required to pay the premium upfront at the time of buying caps. The payment of such premium will entitle him with right to receive the compensation from the seller of the caps as soon as the rate of interest on this loan rises above 8.5%. The compensation will be at the rate of the difference between the rate of none of the cases the cost of this loan will rise above 8.5% calculated on ₹ 40,00,000/-. This implies that in none of the cases the cost of this loan will rise above 8.5%. This hedging benefit is received at the respective interest due dates at the cost of premium to be paid only once.

The premium to be paid on 1st October 2012 is 30,000/- ($\text{₹ } 40,00,000 \times 0.75/100$). The payment of this premium will entitle the buyer of the caps to receive the compensation from the seller of the caps whereas the buyer will not have obligation. The compensation received by the buyer of caps will be as follows:

On 31st March 2013

The buyer of the caps will receive the compensation at the rate of 1.70% ($10.20 - 8.50$) to be calculated on $\text{₹ } 40,00,000$, the amount of compensation will be

$\text{₹ } 68,000/-$ ($40,00,000 \times 1.70/100$).

On 31st March 2014

The buyer of the caps will receive the compensation at the rate of 3.00% ($11.50 - 8.50$) to be calculated on $\text{₹ } 40,00,000/-$, the amount of compensation will be

$\text{₹ } 1,20,000/-$ ($40,00,000 \times 3.00/100$).

On 31st March 2015

The buyer of the caps will receive the compensation at the rate of 0.75% ($9.25 - 8.50$) to be calculated on $\text{₹ } 40,00,000/-$, the amount of compensation will be

$\text{₹ } 30,000$ ($40,00,000 \times 0.75/100$).

On 31st March 2016

The buyer of the caps will not receive the compensation as the actual rate of interest is 8.25% whereas strike rate of caps is 8.5%. Hence, his interest liability shall not exceed 8.50%.

Thus, by paying the premium upfront buyer of the caps gets the compensation on the respective interest due dates without any obligations.

Settlement of hedging Floating interest rate through Cap

Question 9). A textile manufacturer has taken floating interest rate loan of ₹ 40,00,000 on 1st April, 2012. The rate of interest at the inception of loan is 8.5% p.a. interest is to be paid every year on 31st March, and the duration of loan is four years. In the month of October 2012, the Central bank of the country releases following projections about the interest rates likely to prevail in future.

- (i) On 31st March, 2013, at 8.75%;
on 31st March, 2014 at 10%
on 31st March, 2015 at 10.5% and
on 31st March, 2016 at 7.75%.

Show how this borrowing can hedge the risk arising out of expected rise in the rate of interest when he wants to peg his interest cost at 8.50% p.a.

- (ii) Assume that the premium negotiated by both the parties is 0.75% to be paid on 1st October, 2012 and the actual rate of interest on the respective due dates happens to be as:
on 31st March, 2013 at 10.2%;
on 31st March, 2014 at 11.5%;
on 31st March, 2015 at 9.25%;
on 31st March, 2016 at 8.25%.

Show how the settlement will be executed on the perspective interest due dates.

[MTP Nov'21] (6 marks)

Answer: -

As borrower does not want to pay more than 8.5% p.a., on this loan where the rate of interest is likely to rise beyond this, hence, he has hedge the risk by entering into an agreement to buy interest rate caps with the following parameters:

- National Principal: ₹ 40,00,000/-
- Strike rate: 8.5% p.a.
- Reference rate: the rate of interest applicable to this loan
- Calculation and settlement date: 31st March every year
- Duration of the caps: till 31st March 2016
- Premium for caps: negotiable between both the parties

To purchase the caps this borrower is required to pay the premium upfront at the time of buying caps. The payment of such premium will entitle him with right to receive the compensation from the seller of the caps as soon as the rate of interest on this loan rises above 8.5%. The compensation will be at the rate of the difference between the rate of none of the cases the cost of this loan will rise above 8.5% calculated on ₹ 40,00,000/-. This implies that in none of the cases the cost of this loan will rise above 8.5%. This hedging benefit is received at the respective interest due dates at the cost of premium to be paid only once.

The premium to be paid on 1st October 2012 is **30,000/-** ($\text{₹ } 40,00,000 \times 0.75/100$). The payment of this premium will entitle the buyer of the caps to receive the compensation from the seller of the caps whereas the buyer will not have obligation. The compensation received by the buyer of caps will be as follows:

On 31st March 2013

The buyer of the caps will receive the compensation at the rate of 1.70% (10.20 - 8.50) to be calculated on ₹ 40,00,000, the amount of compensation will be ₹ 68000/- ($40,00,000 \times 1.70/100$).

On 31st March 2014

The buyer of the caps will receive the compensation at the rate of 3.00% (11.50 – 8.50) to be calculated on ₹ 40,00,000/-, the amount of compensation will be ₹ 120000/- ($40,00,000 \times 3.00/100$).

On 31st March 2015

The buyer of the caps will receive the compensation at the rate of 0.75% (9.25 – 8.50) to be calculated on ₹ 40,00,000/-, the amount of compensation will be ₹ 30,000 ($40,00,000 \times 0.75/100$).

On 31st March 2016

The buyer of the caps will not receive the compensation as the actual rate of interest is 8.25% whereas strike rate of caps is 8.5%. Hence, his interest liability shall not exceed 8.50%.

Thus, by paying the premium upfront buyer of the caps gets the compensation on the respective interest due dates without any obligations.

Corporate Valuation

Question 12:

Herbal Box is a small but profitable producer of beauty cosmetics using the plant Aloe Vera. Though it is not a high-tech business, yet Herbal's earnings have averaged around ₹ 18.50 lakhs after tax, mainly on the strength of its patented beauty cream to remove the pimples.

The patent has nine years to run, and Herbal Box has been offered ₹ 50 lakhs for the patent rights. Herbal's assets include ₹ 50 lakhs of property, plant and equipment, and ₹ 25 lakhs of working capital. However, the patent is not shown on the books of Herbal Box. Assuming Herbal's cost of capital being 14 percent, calculate its Economic Value Added (EVA).

Answer:

$$\text{EVA} = \text{Income Earned} - (\text{Cost of Capital} \times \text{Total Investment})$$

Total Investments

	Amount (₹ in Lakhs)
Working Capital	25.00
Property, Plant & Equipments	50.00
Patent Rights	50.00
Total	125.00

$$\text{EVA} = \text{Profit Earned} - \text{WACC} \times \text{Invested Capital}$$

$$= ₹ 18.50 \text{ Lakhs} - 14\% \times ₹ 125 \text{ Lakhs}$$

$$= ₹ 1.00 \text{ Lakhs}$$

Similar to Question 13

EVA with investment calculation

Question 8). Herbal World is a small, but profitable producer of beauty cosmetics using the plant, Aloe Vera. Though it is not a high-tech business, yet Herbal's earnings have averaged around ₹ 18.5 lakh after tax, mainly on the strength of its patented beauty cream to remove the pimples.

The patent has nine years to run, and Herbal has been offered ₹50 lakhs for the patent rights. Herbal's assets include ₹ 50 lakhs of property, plant and equipment and ₹ 25 lakhs of working capital. However, the patent is not shown in the books of Herbal World. Assuming Herbal's cost of capital being 14 percent, calculate its Economic Value Added (EVA).

[May'18] (5 marks)

Answer: -

$EVA = NOPAT - WACC \times \text{Capital Employed.}$

Capital Employed:	₹ lacs
Property, etc.	50
Working Capital	25
Patent Value	50
Effective or Invested Capital	125

$WACC \times CE = 14\% \times ₹ 125 \text{ lacs} = ₹ 17.5 \text{ lacs}$

$EVA = ₹ 18.5 \text{ lacs} - ₹ 17.5 \text{ lacs} = ₹ 1 \text{ lac}$

Merger & Acquisition

Question 13:

B Ltd. Wants to acquire S Ltd. and has offered a swap ratio of 2:3 (2 shares for every 3 share of S Ltd.). Following information is available:

Particulars	B Ltd.	S Ltd.
Profit after tax (in ₹)	21,00,000	4,50,000
Equity shares outstanding (Nos.)	6,00,000	1,80,000
EPS (₹)	3.5	2.5
PE Ratio	10 times	7 times
Price quoting per share on BSE before the merger announcement (₹)	35.00	17.50

Required:

- (i) The number of equity shares to be issued by B Ltd. for acquisition of S Ltd.**
- (ii) What is the EPS of B Ltd. after the acquisition?**
- (iii) Determine the equivalent earnings per share of S Ltd. and calculate per share gain or loss to shareholders of S Ltd.**
- (iv) What is the expected market price per share of B Ltd. after the acquisition, assuming its PE Multiple remains unchanged?**
- (v) Determine the market value of the merged firm.**
- (vi) After the announcement of merger, price of shares of S Ltd. rose by 10% on BSE. Mr. X, an investor, having 10,000 shares of S Ltd. is having another investment opportunity, which yields annual**

return of 14% is seeking your advice whether he needs to offload the shares in the market or accept the shares from B Ltd.

Answer:

(i) The number of shares to be issued by B Ltd.:

The Exchange ratio is 2:3

So, new Shares = $1,80,000 \times \frac{2}{3} = 1,20,000$ shares.

(ii) EPS of B Ltd. after acquisition:

Total Earnings	(₹ 21,00,000 + ₹ 4,50,000)	₹25,50,000
No. of Shares	(6,00,000 + 1,20,000)	7,20,000
EPS	(₹ 25,50,000/7,20,000)	₹ 3.5416 or 3.54

(iii) Equivalent EPS of S Ltd. and gain/loss to shareholders:

Equivalent EPS of S Ltd. ($₹ 3.54 \times \frac{2}{3}$)	₹ 2.36
Less: EPS before merger	2.50
Loss	(0.14)

- (iv) New Market Price of B Ltd. (P/E remaining unchanged):

Present P/E Ratio of B Ltd.	10 times
Expected EPS after merger	₹ 3.54
Expected Market Price (₹3.54 × 10)	₹ 35.40

- (v) Market Value of merged firm:

Total number of Shares	7,20,000
Expected Market Price	₹ 35.40
Total value (7,20,000 × 35.40)	₹ 2,54,88,000

- (vi)

a) Equivalent EPS of S Ltd.	₹ 2.36
b) BSE price per share before merger announcement	₹ 17.50
c) After the merger announcement 10% increase in price of share	₹ 1.75
d) Present Market Price of share (b + c)	₹ 19.25
e) Return on Market Price per share (a/d)	12.26

As Mr. X is having another opportunity to earn 14% and expected return on S Ltd.'s share is 12.26%, it is advisable to offload in market.

**No. of shares to be issued, EPS & market price after merger,
Equivalent EPS, Market value of merged firm**

Question 6). A Ltd. wants to acquire T Ltd. and has offered a swap ratio of 1:2 (0.5 shares for every one share of T Ltd.). Following information is provided:

	A Ltd.	T Ltd.
Profit after tax	₹18,00,000	₹3,60,000
Equity shares outstanding (Nos.)	6,00,000	1,80,000
EPS	₹3	₹2
PE Ratio	10 times	7 times
Market price per share	₹30	₹14

Required:

- (i) The number of equity shares to be issued by A Ltd. for acquisition of T Ltd.**
- (ii) What is the EPS of A Ltd. after the acquisition?**
- (iii) Determine the equivalent earnings per share of T Ltd.**
- (iv) What is the expected market price per share of A Ltd. after the acquisition, assuming its PE multiple remains unchanged?**
- (v) Determine the market value of the merged firm.**

[May'18] (8 marks)

Answer: -

(i) The number of shares to be issued by A Ltd.:

The Exchange ratio is 0.5

$$\begin{aligned}\text{So, new Shares} &= 1,80,000 \times 0.5 \\ &= 90,000 \text{ shares.}\end{aligned}$$

(ii) EPS of A Ltd. After acquisition:

Total Earnings	(₹ 18,00,000 + ₹ 3,60,000)	₹ 21,60,000
No. of Shares	(6,00,000 + 90,000)	6,90,000
EPS	(₹ 21,60,000 / 6,90,000)	₹ 3.13

(iii) Equivalent EPS of T Ltd.:

No. of new Shares	0.5
EPS	₹ 3.13
Equivalent EPS (₹ 3.13 × 0.5)	₹ 1.57

(iv) New Market Price of A Ltd. (P/E remaining unchanged):

Present P/E Ratio of A Ltd.	10 times
Expected EPS after merger	₹ 3.13
Expected Market Price (₹3.13 × 10)	₹ 31.30

(v) Market Value of merged firm:

Total number of Shares	6,90,000
Expected Market Price	₹ 31.30
Total value (6,90,000 × 31.30)	₹ 2,15,97,000

Theory

Question 14:

Unrelated companies come together to form an entity. What this relationship is called? Discuss briefly the features of this entity.

Answer:

Unrelated companies come together to form an entity. Such relationship is called conglomerate merger.

Such mergers involve firms engaged in unrelated type of business operations. In other words, the business activities of acquirer and the target are neither related to each other horizontally (i.e., producing the same or competing products) nor vertically (having relationship of buyer and supplier).

Features:

- ❖ In a pure conglomerate merger, there are no important common factors between the companies in production, marketing, research and development and technology.
- ❖ There may however be some degree of overlapping in one or more of these common factors. Such mergers are in fact, unification of different kinds of businesses under one flagship company.

❖ The purpose of merger remains utilization of financial resources, enlarged debt capacity and also synergy of managerial functions.

Question 15:

There exists a vast difference between Project and Parent cash flow? What are these factors? Briefly discuss.

Answer:

There exists a big difference between the project and parent cash flows due to tax rules, exchange controls.

Management and royalty payments are returns to the parent firm. The basis on which a project shall be evaluated depend on one's own cash flows, cash flows accruing to the parent firm or both.

Evaluation of a project on the basis of own cash flows entails that the project should compete favourably with domestic firms and earn a return higher than the local competitors. If not, the shareholders and management of the parent company shall invest in the equity/government bonds of domestic firms. A comparison cannot be made since foreign projects replace imports and are not competitors with existing local firms. Project evaluation based on local cash flows avoid currency conversion and eliminates problems associated with fluctuating exchange rate.

For evaluation of foreign project from the parent firm's angle, both operating and financial cash flows actually remitted to it form the yardstick for the firm's performance and the basis for distribution of dividends to the shareholders and repayment of debt/interest to lenders. An investment has to be evaluated on the basis of net after tax operating cash flows generated by the project. As both types of cash flows (operating and financial) are clubbed together, it is essential to see that financial cash flows are not mixed up with operating cash flows.