

**Paper 14 - Strategic Financial Management**

# Answer to MTP\_Final\_Syllabus 2016\_Jun2017\_Set 2

## Paper 14 - Strategic Financial Management

Full Marks : 100

Time allowed: 3 hours

Answer Question No. 1 which is compulsory and carries 20 marks and any five from Question No. 2 to 8.

### SECTION – A [20 marks]

1. Choose the correct option among four alternative answer. (1 mark for correct choice, 1 mark for justification.) [10×2=20]

(i) X Ltd. issued ₹ 100, 12% Debentures 5 years ago. Interest rates have risen since then, so that debentures of the company are now selling at 15% yield basis. What is the current expected market price of the debentures?

- (A) ₹ 75
- (B) ₹ 80
- (C) ₹ 90
- (D) ₹ 85

(ii)

Given:	Last year	Current year
Sales unit	2,000	2,800
Selling price per unit	₹ 10	₹ 10
EPS	₹ 9.60	₹ 38.40

What is the Degree of Combined Leverage?

- (A) 6-5
- (B) 5-6
- (C) 7-5
- (D) 5-7

(iii) MI Ltd. has annual sales of ₹ 365 lacs. The company has investment opportunities in the money market to earn a return of 15% per annum. If the company could reduce its float by 3 days, what would be the increase in company's total return? (Assume 1 year = 365 days)

- (A) ₹ 45,000
- (B) ₹ 40,000
- (C) ₹ 54,000
- (D) ₹ 46,000

(iv) In the inter-bank market, the DM is quoting ₹ 21-50. If the bank charges 0.125% commission for TT selling, what is the TT selling rate?

- (A) ₹ 21-47/DM
- (B) ₹ 21-53/DM
- (C) ₹ 22-78/DM
- (D) ₹ 23-45/DM

(v) The required rate of return on equity is 24% and cost of debt is 12%. The company has a capital structure mix of 80% of equity and 20% debt. What is the overall rate of return, the company should earn? Assume no tax.

- (A) 21-6%
- (B) 14-4%
- (C) 18-6%
- (D) 17-22%

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(vi) Consider the following quotes:

Spot (Euro/Pound) = 1.6543/1.6557

Spot (Pound/NZ's) = 0.2786/0.2800

Calculate the % spread on the Euro/Pound Rate.

(A) 0.0805%

(B) 0.0080%

(C) 0.8501%

(D) 0.0850%

(vii) Initial Investment ₹ 20 lakh. Expected annual cash flows ₹ 6 lakh for 10 years. Cost of capital @ 15%. What is the Profitability Index? The cumulative discounting factor @ 15% for 10 years = 5.019.

(A) 1.51

(B) 1.15

(C) 5.15

(D) 0.151

(viii) The following details relate to an investment proposal of XYZ Ltd.

Investment outlay— ₹ 100 lakhs

Lease Rentals are payable at ₹ 180 per ₹ 1,000

Term of lease—8 years

Cost of capital—12%

What is the present value of lease rentals, if lease rentals are payable at the end of the year? [Given PV factors at 12% for years (1-8) is 4.9676.

(A) ₹ 98,14,680

(B) ₹ 89,41,680

(C) ₹ 94,18,860

(D) ₹ 96,84,190

(ix) An investor wrote a naked call option. The premium was ₹ 2.50 per share and the market price and exercise price of the share are ₹ 37 and ₹ 41 respectively. The contract being for 100 shares, what is the amount of margin under First Method, that is required to be deposited with the clearing house?

(A) ₹ 590

(B) ₹ 250

(C) ₹ 740

(D) ₹ 400

(x) An investor buys a call option contract for a premium of ₹ 200. The exercise price is ₹ 20 and the current market price of the share is ₹ 17. If the share price after three months reaches ₹ 25, what is the profit made by the option holder on exercising the option? Contract is for 100 shares. Ignore the transaction charges.

**Answer:**

(i) — ₹80 [B]: Market value of Debentures =  $\frac{\text{Interest on Debenture}}{\text{Current Yield Rate}} = \frac{12}{0.15} = ₹80$

(ii) — ₹7.5 [C]: Degree of Combined leverage =  $\frac{\Delta \text{EPS}/\text{EPS}}{\Delta \text{Sales}/\text{Sales}} = \frac{(38.40 - 9.60)/9.60}{(28,000 - 20,000)/20,000} = \frac{3}{40} = 7.5$

(iii) — ₹45,000 [A]:

Average sales per day = ₹3.65 lakhs/365 days

Increase in Total Returns = ₹1 lakhs @ 3days × 15% = ₹45,000.

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(iv) — ₹21.47/DM [A]: TT selling rate = 21.50 (1 – 0.00125) = ₹21.47/DM

(v) — 21.6% [A]:

$$\begin{aligned} \text{Rate of return on equity fund} &= 24\% \times 0.80 = 19.2 \\ \text{Cost of debt is} &= 12\% \times 0.20 = \underline{2.4} \\ \text{Overall rate of return Co. should earn} &= 21.6 \end{aligned}$$

(vi) — 0.0850% [D]: % spread on Euro/Pound rate =  $\frac{1.6557-1.6543}{1.6543} \times 100$

(vii) — 1.51 [A]:

$$\text{P.V. of inflows} = 6.00 \times 5.019 = ₹30.114 \text{ lakhs}$$

$$\text{Profitability Index} = \frac{\text{P.V. of inflows}}{\text{P.V. of outflows}} = \frac{30.114}{20} = 1.51$$

(viii) — ₹89,41,680 [B]: P. V. of lease rentals = ₹18 lakhs × PVI FA(12%, 8)  
= ₹18 lakhs × 4.9676  
= ₹89,41,680

(ix) — ₹ 590 (A)

$$\begin{aligned} \text{Margin} &= (\text{Option premium} \times 100) + \{100 \times 0.20 (\text{market value of the share})\} - \{100 \times \\ &(\text{Exercise price} - \text{market price})\} \\ &= (2.50 \times 100) + \{100 \times (0.20 \times 37)\} - 100 \times (41 - 37) = ₹590 \end{aligned}$$

(x) — ₹ 300 (C):

$$\begin{aligned} \text{Assuming in call option, the total outgo} &= \text{Premium} + \text{Exercise Price} = ₹ 200 + (₹ 20 \times 100) \\ &= ₹ 2,200. \end{aligned}$$

$$\text{After 3 months, if the share price is ₹ 2,500, the net profit} = ₹ 2,500 - ₹ 2,200 = ₹ 300.$$

### SECTION – B [80 marks] Answer any 5 questions from this section

(2)(a) A company is considering two mutually exclusive projects X and Y. Project X costs ₹3,00,000 and Project Y ₹3,60,000. You have been given below the net present value, probability distribution for each project:

Project X		Project Y	
NPV Estimate	Probability	NPV Estimate	Probability
₹		₹	
30,000	0.1	30,000	0.2
60,000	0.4	60,000	0.3
1,20,000	0.4	1,20,000	0.3
1,50,000	0.1	1,50,000	0.2

(i) Compute the expected net present value of Projects X and Y.

(ii) Compute the risk attached to each project i.e., Standard Deviation of each probability distribution.

(iii) Which project do you consider more risky and why?

(iv) Compute the profitability index of each project.

[12]

(b) The risk free return is 8 per cent and the return on market portfolio is 14 per cent. If the last

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dividend on Share 'A' was ₹2.00 and assuming that its dividend and earnings are expected to grow at the constant rate of 5 per cent. The beta of share 'A' is 2.50. Compute the intrinsic value of share A. [4]

Answer:

(2) (a)

Project X					
NPV Estimate	Probability	NPV Estimate x Probability	Deviation from Expected NPV i.e. ₹ 90,000	Square of the deviation	Square of the deviation x Probability
₹		₹		₹	₹
30,000	0.1	3,000	-60,000	36,00,000,000	3,60,000,000
60,000	0.4	24,000	-30,000	9,00,000,000	3,60,000,000
1,20,000	0.4	48,000	30,000	9,00,000,000	3,60,000,000
1,50,000	0.1	15,000	60,000	36,00,000,000	3,60,000,000
Expected NPV		90,000			14,40,000,000

Project Y					
NPV Estimate	Probability	NPV Estimate x Probability	Deviation from Expected NPV i.e. ₹ 90,000	Square of the deviation	Square of the deviation x Probability
₹		₹		₹	₹
30,000	0.2	6,000	-60,000	36,00,000,000	7,20,000,000
60,000	0.3	18,000	-30,000	9,00,000,000	2,70,000,000
1,20,000	0.3	36,000	30,000	9,00,000,000	2,70,000,000
1,50,000	0.2	30,000	60,000	36,00,000,000	7,20,000,000
Expected NPV		90,000			19,80,000,000

(i) The expected net present value of Projects X and Y is ₹ 90,000 each.

(ii) Standard Deviation =  $\sqrt{\text{Square of the deviation} \times \text{Probability}}$   
 In case of Project X: Standard Deviation =  $\sqrt{₹14,40,000,000}$   
 = ₹ 37,947

In case of Project Y: Standard Deviation =  $\sqrt{₹19,80,000,000}$   
 = ₹ 44,497

(iii) Coefficient of variation =  $\frac{\text{Standard deviation}}{\text{Expected net present value}}$

In case of Project X: Coefficient of variation =  $\frac{37,947}{90,000} = 0.42$

In case of Project Y : Coefficient of variation =  $\frac{44,497}{90,000} = 0.4944$  or 0.50

Project Y is riskier since it has a higher coefficient of variation.

(iv) Profitability index =  $\frac{\text{Discounted cash inflow}}{\text{Discounted cash outflow}}$

In case of Project X : Profitability Index =  $\frac{90,000 + 3,00,000}{3,00,000} = 1.30$

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In case of Project Y : Profitability Index =  $\frac{90,000 + 3,60,000}{3,60,000} = \frac{4,50,000}{3,60,000} = 1.25$

(b)

Notation	Particulars	Value
$\beta_A$	Beta of share	2.5
$R_M$	market return	14%
$R_F$	risk free rate of return	8%
R	growth rate of Dividends	5%
$D_0$	last Year's dividend	2

- Computation of Expected Return  
 Expected return  $[E(R_A)] = R_F + [\beta_A * (R_M - R_F)]$   
 $= 0.08 + [2.5 * (0.14 - 0.08)]$   
 $= 0.08 + 2.5 (0.14 - 0.08) = 0.08 + 0.15 = 0.23$   
 i.e.,  $K_e = 23\%$
- Intrinsic Value of Share  $= D_1 / (K_e - g) = D_0 * (1 + g) / (K_e - g)$   
 $= 2 * (1 + 0.05) / (0.23 - 0.05) = ₹11.67$   
 The intrinsic value of share A is ₹11.67.

(3)(a) A mutual fund made an issue of 800000 units of ₹10 each on 01.04.2016. No entry load was charged. It made the following investments after meeting its issue expenses.

	₹
<b>40,000 Equity Shares of ₹100 @ ₹160</b>	<b>64,00,000</b>
<b>At par:</b>	
<b>8% Government Securities</b>	<b>6,40,000</b>
<b>9% Debentures (unlisted)</b>	<b>4,00,000</b>
<b>10% Debentures (listed)</b>	<b>4,00,000</b>
	<b>78,40,000</b>

During the year, dividend of ₹9,60,000 was received on equity shares. Interest on all types of debt securities was received as and when due. At the end of the year on 31.03.2017, equity shares and 10% debentures were quoted at 175% and 90% of the respective par value. Other investments were at par. The operating expenses during the year amounted to ₹4,00,000.

- Find out the Net Assets Value (NAV) per unit at the end of the year.
- Find out the NAV if the Mutual Fund had distributed a dividend of ₹0.90 per unit during the year to the unit holders. [9]

(b) The data pertaining to 5 mutual funds is given below:

Fund	Return	Standard deviation ( $\sigma$ )	Beta ( $\beta$ )
J	13	6	1.50
K	9	2	0.90
L	11	3	1.20
M	15	5	0.80
N	12	4	1.10

Compute the reward- to- variability/volatility ratios and rank the funds, if the risk-free rate is 6%. [7]

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**Answer:**

### (3) (a) Computation of closing net asset value

Given the total initial investment ₹ 78,40,000 out of issue proceeds of ₹ 80,00,000 therefore balance of ₹ 1,60,000 is considered as issue expenses.

Particulars	Opening value of investment	Capital Appreciation	Closing value of investment	Income
40000 Equity of ₹100 each at ₹ 160	64,00,000	6,00,000	70,00,000	9,60,000
8% Government securities	6,40,000	Nil	6,40,000	51,200
9% Debentures (Unlisted)	4,00,000	Nil	4,00,000	36,000
10% Debentures (Listed)	4,00,000	- 40,000	3,60,000	40,000
<b>Total</b>	<b>78,40,000</b>	<b>5,60,000</b>	<b>84,00,000</b>	<b>10,87,200</b>

Total Income	=	₹ 10,87,200
Less: Opening Expenses during the period	=	₹ 4,00,000
Net Income	=	₹ 6,87,200
Net Fund Balance 84,00,000 + 6,87,200	=	₹90,87,200
Less: Dividend = 7,20,000 (8,00,000 × 0.90)	=	₹ 7,20,000
Net Fund balance (after dividend)	=	₹ 83,67,200
Net Asset Value (before considering dividend)	=	₹ 90,87,200
Net Asset Value (before considering dividend) [₹90,87,200 ÷ 800000]	=	₹ 11.36
Net Asset Value (After dividend) [₹ 83,67,200 ÷ 800000]	=	₹ 10.46

**Note:** Closing market price of the investment have been quoted at a percentage of the face value (Assumption)

### (b) For computing reward to variability/volatility ratio is

- Sharpe's Ratio =  $[(R_p - R_f) \div \sigma_p]$
- Treynor's Ratio =  $[(R_p - R_f) \div \beta_p]$

Ranking based on Sharpe's Ratio and Treynor Ratio method.

Fund	Under sharpe's method $[(R_p - R_f) \div \sigma_p]$	Ranking	Under Treynor method $[(R_p - R_f) \div \beta_p]$	
J	$[(13 - 6) \div 6] = 1.17$	4	$[(13 - 6) \div 1.50] = 4.67$	3
K	$[(9 - 6) \div 2] = 1.50$	3	$[(9 - 6) \div 0.90] = 3.33$	5
L	$[(11 - 6) \div 3] = 1.67$	2	$[(11 - 6) \div 1.20] = 4.17$	4
M	$[(15 - 6) \div 5] = 1.80$	1	$[(15 - 6) \div 0.80] = 11.25$	1
N	$[(12 - 6) \div 4] = 1.50$	3	$[(12 - 6) \div 1.10] = 5.45$	2

**(4) (a) A Ltd has an expected return of 22% and standard deviation of 40%. B Ltd. has an expected return of 24% and standard deviation of 38%. A Ltd. has a beta of 0.86 and B Ltd. has a beta of 1.24. The correlation coefficient between the return of A Ltd. and B Ltd. is 0.72. The standard deviation of the market return is 20%. Suggest:**

**(i) Is investing in B Ltd. better than investing in A Ltd.?**

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- (ii) If you invest 30% in B Ltd. and 70% in A Ltd., what is your expected rate of return and portfolio standard deviation?  
 (iii) What is the market portfolios expected rate of return and how much is the risk-free rate?  
 (iv) What is the beta of portfolio if A Ltd.'s weight is 70% and B Ltd.'s weight is 30%?

[8]

(b) Compute Return under CAPM and the Average Return of the Portfolio from the following information:

Investment	Initial Price	Dividends	Market Price at the end of the year	Beta Risk Factor
A. Cement Ltd	25	2	50	0.80
Steel Ltd	35	2	60	0.70
Liquor Ltd	45	2	135	0.50
B. Govt. of India Bonds	1,000	140	1005	0.99

Risk Free Return = 14%

[8]

**Answer:**

- (4) (a) (i) Expected return of B Ltd. is 24% as compared to 22% of A Ltd.  
 Standard deviation of B Ltd. is 38% as compared to 40% of A Ltd.  
 In view of the above, A Ltd. has lower return and carried higher risk as compared to B Ltd. Hence, investing in B Ltd. is better than investing in A Ltd. but investing in both A Ltd. and B Ltd. will cause to yield the advantage due to diversification of portfolio.

$$\begin{aligned} (ii) R_{AB} &= (0.22 \times 0.7) + (0.24 \times 0.3) = 22.6\% \\ \sigma_{AB} &= (0.40^2 \times 0.7^2) + (0.38^2 \times 0.3^2) + (2 \times 0.7 \times 0.3 \times 0.72 \times 0.40 \times 0.38) \\ &= (0.16 \times 0.49) + (0.1444 \times 0.09) + 0.0459648 = 0.078 + 0.0112996 + 0.0459648 \\ &= 0.1374 \end{aligned}$$

$$\sigma_{AB} = \sqrt{\sigma_{AB}^2} = \sqrt{0.1374} = 0.37 \text{ or } 37\%$$

- (iii) The risk-free rate will be the same for A and B Ltd. Their rates of return are given as follows:

$$\begin{aligned} R_A = 22 &= R_f + (R_m - R_f) 0.86 \\ R_B = 24 &= R_f + (R_m - R_f) 1.24 \\ R_A - R_B &= -2 = (R_m - R_f) (-0.38) & \square R_m - R_f &= -2/-0.38 = 5.26\% \\ R_A = 22 &= R_f + (5.6) 0.86 & \square R_f &= 17.5\% \\ R_B = 24 &= R_f + (5.26) 1.24 & \square R_f &= 17.5\% \\ R_m - 17.5 &= 5.26 & \square R_m &= 22.76\% \end{aligned}$$

$$(iv) \beta_{AB} = (\beta_A \times W_A) + (\beta_B \times W_B) = (0.86 \times 0.7) + (1.24 \times 0.3) = 0.974$$

(b) Computation of Expected Return and Average Return

Securities	Cost	Dividend	Capital Gain	Expected Return= $R_f + \beta(R_m - R_f)$
Cement Limited	25	2	(50-25)=25	$[14+0.80 \times (26.33-14)]=23.86\%$
Steel Limited	35	2	(60-35)=25	$[14+0.70 \times (26.33-14)]=22.63\%$
Liquor Limited	45	2	(135-45)=90	$[14+0.50 \times (26.33-14)]=20.17\%$
GOI Bonds	1,000	140	(1,005-1,000)=5	$[14+0.90 \times (26.33-14)]=26.21\%$
Total	1,105	146	145	

**Notes:** Return on Market Portfolio: Expected Return on Market Portfolio ( $R_m$ )



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$$= \frac{\text{Dividends} + \text{Capital Gains}}{\text{Cost of the total Investment}} = \frac{146 + 145}{1,105 \times 100} = 26.33\%$$

**Note:** in the absence of return of a market Portfolio, it is assumed that portfolio containing one unit of the four securities listed above would result in a completely diversified portfolio, and therefore represent the Market Portfolio.

### Portfolio's Expected Return based on CAPM:

(i) If the portfolio contains the above securities in equal proportion in terms of value -  
Expected Return =  $(23.86\% + 22.63\% + 20.17\% + 26.21\%) \div 4 = 23.22\%$

(ii) If the Portfolio contains one unit of the above securities, then-

Securities	Cost	Expected Return	Product
Cement Limited	25	23.86%	$25 \times 23.86 = 596.25$
Steel Limited	35	22.63%	$35 \times 22.63 = 792.05$
Liquor Limited	45	20.17%	$45 \times 20.17 = 907.65$
GOI Bonds	1,000	26.21%	$1,000 \times 26.21 = 26,210$
<b>Total</b>	<b>1,105</b>		<b>28,505.95</b>
		<b>Weighted Return</b>	$\frac{28,505.95}{1,105} = 25.79\%$

Therefore, Expected Return from Portfolio (based on CAPM) = 25.79%

**(5)(a) Compute the theoretical price of the following securities for 6 months:**

Securities of	A Ltd	B Ltd.	C Ltd.
<b>Spot Price</b>	<b>₹5,450</b>	<b>₹450</b>	<b>₹1,050</b>
<b>Dividend Expected</b>	<b>₹60</b>	<b>₹25</b>	<b>₹60</b>
<b>Dividend Receivable in</b>	<b>2 months</b>	<b>3 months</b>	<b>4 months</b>
<b>6 month's futures contract rate</b>	<b>₹5,510</b>	<b>₹490</b>	<b>₹1,070</b>

You may assume a risk-free interest rate of 9% p. a.

(i) What action do you recommend to benefit from futures contract?  
 (ii) What will be the impact on the theoretical forward prices if the risk-free interest rate is taken lower than 9%? [8+2=10]

(b) The equity share of VCC Ltd. is quoted at ₹210. A 3-month call option is available at a premium of ₹6 per share and a 3-month put option is available at a premium of ₹5 per share. Ascertain the net pay offs to the option holder of a call option and a put option.

(i) The strike price in both cases is ₹220, and  
 (ii) The share price on the exercise day is ₹ 200, 210, 220, 230, and 240.

Also indicate the price range at which the call and the put options may be gainfully exercised. [6]

**Answer:**

**(5) (a) (i)**

Securities of	A Ltd.	B Ltd.	C Ltd.
Spot Price ( $S_x$ )	₹ 5450	₹ 450	₹ 1050
Dividend Expected ( $D_F$ )	₹60	₹ 25	₹ 60
Dividend Receivable in (t)	2 months or 0.1667	3 months or 0.25	4 months or 0.333

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Risk free interest rate (r)	9% or 0.09	9% or 0.09	9% or 0.09
Present value of Dividend (D <sub>P</sub> )	DF×e <sup>rt</sup> or DF ÷ e <sup>rt</sup> ₹ 60 ÷ e <sup>0.09×0.1667</sup> = ₹ 60 + e <sup>0.015</sup> = 60 ÷ 1.01511 = ₹ 59.107	DF×e <sup>rt</sup> or DF ÷ e <sup>rt</sup> ₹ 25 ÷ e <sup>0.09×0.25</sup> = ₹ 25 + e <sup>0.0225</sup> = 25 ÷ 1.022755 = ₹ 24.444	DF×e <sup>rt</sup> or DF ÷ e <sup>rt</sup> ₹60 ÷ e <sup>0.09×0.333</sup> = ₹ 60 + e <sup>0.03</sup> = 60 ÷ 1.030455 = ₹ 58.227
Adjusted Spot price = S <sub>x</sub> - D <sub>P</sub>	5450 - 59.107 = ₹ 5390.893	₹ 450 - ₹ 24.444 = ₹ 425.556	₹ 1050 - ₹ 58.227 = ₹ 991.773
Theoretical Forward Price (TFP <sub>x</sub> )	5390.893×e <sup>0.09×0.50</sup> 5390.893×e <sup>0.045</sup> 5390.893×1.04603 = ₹ 5639.036	425.556×e <sup>0.09×0.50</sup> 425.556×e <sup>0.045</sup> 425.556×1.04603 = ₹445.144	991.773×e <sup>0.09×0.50</sup> 991.773×e <sup>0.045</sup> 991.773×1.04603 = ₹ 1037.424
6 months futures contract Rate (AFP <sub>x</sub> )	₹ 5510	₹ 490	₹ 1070
TFP <sub>x</sub> Vs. AFP <sub>x</sub>	AFP <sub>x</sub> is lower	AFP <sub>x</sub> is higher	AFP <sub>x</sub> is higher
Valuation in futures market	Under valued	Overvalued	Overvalued
Recommended Action	Sale Spot, buy future	Buy spot, sell future	Buy spot, sell future

(ii) A lower risk-free rate would mean a lower theoretical forward price and a lower adjusted spot price.

(b)

Net pay-off for the holder of the call option					(₹)
Strike price on exercise day	200	210	220	230	240
Option exercise	No	No	No	Yes	Yes
Outflow (Strike price)	Nil	Nil	Nil	220	220
Outflow (premium)	6	6	6	6	6
Total outflow	6	6	6	226	226
Less: Inflow (sales proceeds)	--	--	--	230	240
Net pay off	- 6	- 6	- 6	4	14

Net pay-off for the holder of the put option					(₹)
Strike price on exercise day	200	210	220	230	240
Option exercise	Yes	Yes	No	No	No
Inflow (Strike price)	220	220	Nil	Nil	Nil
Less: Outflow (purchase price)	200	210	--	--	--
Less: Outflow (premium)	5	5	5	5	5
Net pay off	15	5	- 5	- 5	- 5

**Analysis** – The loss of the option holder is restricted to the amount of premium paid. The profit (positive pay off) depends on the difference between the strike price and the share price on the exercise day.

(6)(a) On 1<sup>st</sup> April, 3 months interest rate in the US and Germany are 6.5 percent and 4.5 percent per annum respectively. The \$/DM spot rate is 0.6560. What would be the forward rate for DM for delivery on 30<sup>th</sup> June? [8]

(b) Trie market received rumor about XYZ Corporation's tie - up with a multinational company. This has induced the market price to move up. If the rumor is false, the XYZ Corporation's stock price will probably fall dramatically. To protect from this an investor

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has bought the call and put options. He purchased one 3 months call with a strike price of ₹42 for ₹2 premium, and paid ₹1 per share premium for a 3 months put with a strike price of ₹40.

- (i) Determine the Investor's position if the tie up offer bids the price of XYZ Corporation's stock up to ₹44 in 3 months.
- (ii) Determine the Investor's ending position, if the tie up programme fails and the price of the stocks falls to ₹35 in 3 months. [8]

**Answer:**

- (6) (a) Interest Rate parity Theorem – The theorem states that in equilibrium the difference in interest rates between two countries is equal to the difference between the forward and spot rates of exchanges. The mathematical formula representing the theorem is given below:

$$\frac{i_A - i_B}{1 + i_B} = \frac{F_0 - S_0}{S_0}$$

Where,

$i_A$  = Interest rate of US 6.5% or 0.065

$i_B$  = Interest rate of Germany 4.5% or 0.045

$F_0$  = Forward rate at the end of one year

$S_0$  = Spot rate 1 \$ = 0.6560 DM

$$\frac{0.065 - 0.045}{1 + 0.045} = \frac{F_0 - 0.6560}{0.6560}$$

$$\frac{0.02}{1.045} = \frac{F_0 - 0.6560}{0.6560}$$

$$0.02 \times 0.6560 = (1.045 \times F_0) - (1.045 \times 0.6560)$$

$$0.01312 = 1.045 F_0 - 0.68552$$

$$1.045 F_0 = 0.68552 + 0.01312$$

$$1.045 F_0 = 0.69864$$

$$F_0 = 0.69864 / 1.045 = 0.66855$$

Forward rate after 12 months = 0.66855

Forward premium p.a.

$$= \text{Forward rate} - \text{Spot rate} = 0.66855 - 0.6560 = 0.01255$$

$$\text{Forward premium for 3 months} = 0.01255 / 4 = 0.003137$$

Forward rate for 3 months for delivery on 30<sup>th</sup> June

$$= \text{Spot rate} + 3 \text{ months forward premium} = 0.6560 + 0.003137 = 0.6591$$

- (b) 1. Cost of call and put options  
 Cost of Call and put options = (₹2 per share call) + (₹1 per share put) = ₹2 + ₹1 = ₹3

2. Position of price increases to ₹43

Particulars	Time	₹
(i) Cost of Options	T <sub>0</sub>	3
(ii) If price increases to ₹44, investor will not exercise the put option. Gain on call [Spot price on Expiry Date - Exercise price = ₹44 (-) ₹42]	T <sub>1</sub>	2
<b>(iii) Net Loss due to options [(i) - (ii)]</b>	<b>T<sub>1</sub></b>	<b>1</b>

3. Position if price falls to ₹36

Particulars	Time	₹
(i) Cost of Options	T <sub>0</sub>	3
(ii) If price falls to ₹35, investor will not exercise the call option. Gain on put [Exercise price - Spot price on expiry date = ₹40 (-) ₹35]	T <sub>1</sub>	5

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(iii) Net Gain due to options [(ii)-(i)]

T<sub>1</sub>

2

- (7) (a) A company wish to acquire an asset costing ₹1,00,000. The company has an offer from a bank to lend @ 18%. The principal amount is repayable in 5 years end installments. A leasing Company has also submitted a proposal to the Company to acquire the asset on lease at yearly rentals of ₹ 280 per ₹ 1,000 of the assets value for 5 years payable at year end. The rate of depreciation of the asset allowable for tax purposes is 20% on W.D.V with no extra shift allowance. The salvage value of the asset at the end of 5 years period is estimated to be ₹1,000. Whether the Company should accept the proposal of Bank or leasing company, if the effective tax rate of the company is 50%? The Company discounts all its cash flows at 18%.

P.V factor at 18%

Year-end	1	2	3	4	5
PV factor @ 18%	0.847	0.718	0.609	0.516	0.437

[12]

- (b) An investor is seeking the price to pay for a security, whose standard deviation is 4.00 per cent. The correlation coefficient for the security with the market is 0.8 and the market standard deviation is 2.2 per cent. The return from government securities is 5.2 per cent and from the market portfolio is 9.8 percent. The investor knows that, by calculating the required return, he can then determine the price to pay for the security. What is the required return on the security? [4]

Answer:

- (7) (a) (I) Borrowing Option:

(Amount in ₹)

Year	Principal	Interest @ 18% p.a.	Depreciation @ 20% on W.D.V.	Tax shield (3)+(4)×50%	Net cash flow (2)+(3)-(5)	P. V. Factor @18%	Discounted Cash Flows (6)×(7)	
1 (₹)	2 (₹)	3 (₹)	4 (₹)	5 (₹)	6 (₹)	7 (₹)	8 (₹)	
1	20,000	18,000	20,000	19,000	19,000	0.847	16,093	
2	20,000	14,400	16,000	15,200	19,200	0.718	13,786	
3	20,000	10,800	12,800	11,800	19,000	0.609	11,571	
4	20,000	7,200	10,240	8,720	18,480	0.516	9,536	
5	20,000	3,600	8,192	5,896	17,704	0.437	7,736	
5	(1,000)	---	31,768*	15,884	(16,884)	0.437	(7,378)	
<b>Present value of Total Cash out flow</b>								<b>51,350</b>

\*WDV at the end of 5 years shall be ₹ 32,768. Deducting there from the salvage value of ₹ 1,000 the capital loss claim will be ₹ 31,768.

- (II) Leasing Option:

(Amount in ₹)

Year	Lease Rentals (₹)	Tax shield (₹)	Net Cash Flows (₹)	P.V. Factor @ 18%	Discounted Cash Flows (₹)
1	28,000	14,000	14,000	0.847	11,858
2	28,000	14,000	14,000	0.718	10,052
3	28,000	14,000	14,000	0.609	8,526
4	28,000	14,000	14,000	0.516	7,224
5	28,000	14,000	14,000	0.437	6,118

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Discounted after tax cost

43,778

**Advise:** By making analysis of both the alternatives, it is observed that the Present value of the Cash Outflow is lower in alternative II by ₹7,572 (i.e. 51,350 – 43,778). Hence it is suggested to acquire the asset on lease basis.

**(b) Beta Coefficient**

$$\begin{aligned} &= \frac{\text{Correlation coefficient between the security and the market} \times \text{Std. deviation of the security return}}{\text{Std. deviation of the market return}} \\ &= \frac{(0.8) \times (0.04)}{(0.022)} = 1.454 \end{aligned}$$

Now, required return on the security: Rate of return on risk free security + beta coefficient (required return on market portfolio - rate of return on risk free security)

$$R = R_f + \beta (R_m - R_f) = 5.2 + 1.454 (9.8 - 5.2) = 11.89\%$$

**(8) Answer any four questions:**

**[4×4=16]**

- (a) Write short note on constituents of Capital Market. [4]**  
**(b) What Makes Commodity Trading attractive? [4]**  
**(c) Write short notes on Green Shoe Option. [4]**  
**(d) Describe the role of RBI as Governments' Debt Manager. [4]**  
**(e) Features of Global Depository Receipt (GDR). [4]**

**Answer:**

**(8) (a)** The following are the constituents of capital market:

- Investment Trust- Financial Institutions which collects savings from public and invest that amount in industrial securities. Example- Tata Investment Trust Pvt. Ltd.
- Specialised Financial Institutions- These type of financial institutions provides long term finance to industries. Example- Industrial Financial Corporation Of India (IFCI) Ltd.
- Insurance Company- Insurance Companies collect premium from policy holders and invest the amount in different industrial securities. Example- Life Insurance Corporation of India (LIC).
- Securities Market- Securities is a broader term which encompasses shares, debentures, bonds etc. the market where securities transactions are held is known as securities market. Securities market can be further classified into primary or new issue market and secondary or share market.

**(b)** The following points make commodity trading attractive.

- A good low-risk portfolio diversifier
- A highly liquid asset class, acting as a counterweight to stocks, bonds and real estate.
- Less volatile, compared with, equities and bonds.
- Investors can leverage their investments and multiply potential earnings.
- Better risk-adjusted returns.
- A good hedge against any downturn in equities or bonds as there is little correlation with equity and bond markets.
- High co-relation with changes in inflation.
- No securities transaction tax levied.

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**(c) Green Shoe Option:**

It is an option that allows the underwriting of an IPO to sell additional shares if the demand is high. It can be understood as an option that allows the underwriter for a new issue to buy and resell additional shares up to certain pre-determined quantity.

Looking to the exceptional interest of investors in terms of over subscription of the issue certain provisions are made to issues additional shares or bonds to underwriters for distribution. The issuer authorizes for additional shares or bonds. In common parlance, it is retention of oversubscription to a certain extent, it is a Special feature of EURO-issues.

In the Indian context, green shoe option has a limited connotation. SEBI guidelines governing public issues certain appropriate provisions for accepting over-subscriptions subject to a ceiling say, 15% of the offer made to public.

**(d)** In this role, RBI set policies, in consultation with the government and determine the operational aspects of raising money to help the government finance its requirements:

- Determine the size, tenure and nature (fixed or floating rate) of the loan
- Define the issuing process including holding of auctions
- Inform the public and potential investors about upcoming government loan auctions

The Reserve Bank also undertakes market development efforts, including enhanced secondary market trading and settlement mechanisms, authorization of primary dealers and improved transparency of issuing process to increase investor confidence, with the objective of broadening and deepening the government securities market.

**(e)** Features of GDRs are:

- Underlying shares: Each GDR may represent one or more underlying shares, which are physically held by the custodians appointed by the Depository Bank.
- Entry in Company's books: In the company's books, the Depository Bank's name appears as the holders of the shares.
- Returns: Depository gets the dividends from the company (in local currency) and distributes them to the holders of the Depository Receipts after converting into dollars at the going rate of the exchange.
- Negotiable: GDRs are exchangeable with the underlying share either at any time, or after the lapse of a particular period of time, generally 45 days.
- Globally marketed: GDRs are marketed globally without being confined to borders of any market or country as it can be traded in more than one country.
- Settlement: GDRs are settled through CEDEL & Euro-Clear International Book Entry Systems.