Paper-12: FINANCIAL MANAGEMENT & INTERNATIONAL FINANCE

Time Allowed: 3 Hours **Full Marks: 100**

Answer Question No. 1 from Part A which is compulsory and any five questions from Part B.
Working notes should form a part of the answer
"Wherever necessary, suitable assumptions should be made and indicated in answers by the candidates"

PART A (25 Marks)

1. (a) (i) High proportion of gearing will increase: **[10 x 2 = 20]**
(a) Financial risk
(b) Business risk
(c) Cost of funds
(d) Shareholders equity

(ii) The financial data furnished for A Ltd. for the year ended 31st March, 2013, as follows:
Operating leverage = 3 : 1; Financial leverage = 2 : 1; Interest charges p.a. is ₹ 12 lakhs, Corporate tax rate is 40%. The variable cost as % of sales is 60%. The EBIT of the company is:
(a) ₹ 24 lakhs
(b) ₹ 22. Lakhs
(c) ₹ 32 lakhs
(d) ₹ 18 lakhs

(iii) Modern Ltd.'s share beta factor is 1.40. The risk free rate of interest of government securities is 9%. The expected rate of return on the company equity shares is 16%. The cost of equity capital based on CAPM is:
(a) 9%
(b) 16%
(c) 18.8%
(d) 15.8%

(iv) If EBIT is less than financial break-even point then:
(a) EPS will be positive
(b) EPS will be negative
(c) there will be no impact on EPS
(d) Cost of debt raises

(v) BKC Ltd. has profits before interest and taxes of ₹ 3,00,000. The applicable tax rate is 40%. Its required rate of return on equity in the absence of borrowing is 18%. In the absence of personal taxes, the value of the company in an MM world with no leverage is:
(a) ₹ 10,00,000
(b) ₹ 11,60,000
(c) ₹ 12,60,000
(d) ₹ 14,00,000

(vi) The dividend decisions are concerned with:
(a) determination of quantum of profits to be distributed to the owners
(b) the frequency of such payments
(c) the amounts to be retained by the firm
(d) all of the above

(vii) A financial lease is preferred in the situation:
(a) when the long-term stability of asset is uncertain

(b) When the lessee want to own the asset but does not have enough funds to invest
(c) when the asset is subject to rapid obsolescence
(d) none of the above

(viii) About 50 items are required every day for a machine. A fixed cost of ₹ 50 per order is incurred for placing an order. The inventory carrying cost per item amounts to ₹ 0.02 per day. The lead period is 32 days. Compute reorder level.
(a) 1,200 items
(b) 1,400 items
(c) 1,600 items
(d) 1,800 items

(ix) The stock of Pioneer company sells for ₹ 120. The present value of exercise price and the value of a call option are ₹ 108.70 and ₹ 19.80 respectively. Hence the value of the put option is:
(a) ₹ 8.50
(b) ₹ 9.00
(c) ₹ 11.00
(d) ₹ 8.25

(x) Currency swap is a method of:
(a) speculating the foreign exchange
(b) hedging against foreign exchange risk
(c) making money by banks
(d) exchanging one currency for another

(b) State if each of the following sentences is T (=true) or F (= false): [5 x 1=5]

(i) Corporate tax rate does not affect cost of debt.
(ii) IRR and NPV always give the same profitability ranking.
(iii) If Profitability Index is 1, cash inflow and cash outflow would be equal.
(iv) An investor expecting a fall in interest rates buys a floor and also a cap.
(v) Commercial paper introduced by RBI in early 1990, is 'a secured promissory note' tied to any specific transaction.

Answer:

1. (a) (i) (a) Financial risk

(ii) (a) ₹ 24 lakhs

Financial leverage = 2 (given)

$$\frac{EBIT}{EBIT - Interest} = 2$$

$$\frac{EBIT}{EBIT - 12} = 2$$

2 EBIT – 24 = EBIT

∴ EBIT = ₹ 24 lakhs

(iii) (c) 18.8%

K_e = 9% + 1.40 (16% - 9%) = 18.8%

(iv) (b) EPS will be negative

(v) (a) ₹ 10,00,000

$$\text{Company Value} = \frac{₹3,00,000 \times 0.6}{0.18} = ₹ 10,00,000$$

(vi) (d) all of the above

(vii) (b) When the lessee want to own the asset but does not have enough funds to invest

(viii) (c) 1,600 items
Reorder level
= Maximum usage per day x Maximum lead time
= 50 items per day x 32 days = 1,600 items

(ix) (a) ₹ 8.50
Value of put option
= Value of call option + P.V. of exercise price – Stock price
= ₹ 19.80 + ₹ 108.70 – 120
= ₹ 8.50

(x) (b) hedging against foreign exchange risk

(b) **(i) False:**
Debt may be perpetual or redeemable debt, while calculating cost of debt, the corporate tax rate effect the formula as follows-
(a) Perpetual /irredeemable debt:
K_d (after tax) = 1/P(1-t)
Where, t= tax rate,
P = net proceeds and k_d = Cost of debt, I= Interest
(b) Redeemable debt : (after tax)

$$K_d = \frac{I + 1/n(P - NP)}{1/2(P + NP)} x(1-t)$$

(ii) False:
When evaluating mutually exclusive projects, the one with the highest IRR may not be the one with best NPV. The conflict between NPV and IRR for evaluation of mutually exclusive projects is due to reinvestment assumption:
(a) NPV assumes Cash flows reinvested at the Cost of Capital.
(b) IRR assumes Cash flows reinvested at the internal rate of return.

(iii) True:
We know that Profitability Index (PI) = PV of Cash Inflow/ PV of Cash Outflow. So, if P1 is 1, then cash inflow and cash outflow would be equal.

(iv) True:
A Cap provides variable rate borrowers with protection against raising interest rates while also retaining the advantages of lower or falling interest rate. Floors are used to obtain certainty for investments and budgeting by setting minimum interest rate on investments

(v) False:
Commercial Paper (CP) is an unsecured promissory note issued by a firm to raise funds for a short period, generally varying from a few days to a few months

PART B (75 MARKS)

2. A company proposes to introduce a new product. The market study information suggests that the company can set a price of ₹36 or ₹ 38 or ₹40 per unit. The company intends to hire a machinery to manufacture the product at ₹ 400000 per annum but if the annual production exceeds 60,000 units additional cost of ₹1,60,000 per annum will be incurred on the hire of machinery. The variable cost is ₹10 or ₹12 per unit produced. The following estimate of sales at each possible selling price has been prepared:

Selling Price	₹36		₹38		₹40	
	Units	Probability	Units	Probability	Units	Probability
Pessimistic	70,000	0.3	60,000	0.1	30,000	0.4
Most Likely	80,000	0.5	70,000	0.7	60,000	0.5
Optimistic	90,000	0.2	90,000	0.2	70,000	0.1

The probability of unit costs is 0.6 for variable cost of ₹ 10 per unit and 0.4 for variable costs of ₹12 per unit. The company has committed an advertisement expenditure of ₹80,000 per annum.

You are required to analyze and advise which selling price will be appropriate from the point of view of maximization of profits. [15]

Answer:

2. Since the combined effect of three variables (selling price, variable cost and hire charges of machinery) have to be taken into account, separate calculations are needed for each possible combination with respect to a particular selling price.

Units	Contribution	Total Contribution (₹ 000)	HMA (₹ 000)	Net Contribution (₹ 000)	Probability	Expected Value (₹ 000)
Selling Price ₹36						
Units 70,000	26	1,820	640 (400+160+80)	1,180 (1,820-640)	0.3 × 0.6 = 0.18	212.4 (1180×0.18)
	24	1,680	640	1,040	0.3 × 0.4 = 0.12	124.8
Units 80,000	26	2,080	640	1,440	0.5 × 0.6 = 0.30	432
	24	1,920	640	1,280	0.5 × 0.4 = 0.20	256
Units 90,000	26	2,340	640	1,700	0.2 × 0.6 = 0.12	204
	24	2,160	640	1,520	0.2 × 0.4 = 0.08	121.6
						1,350.80

Units	Contribution	Total Contribution (₹ 000)	HMA (₹ 000)	Net Contribution (₹ 000)	Probability	Expected Value (₹ 000)
Selling Price ₹38						
Units 60,000	28	1,680	480 (400+80)	1,200 (1,680-480)	0.1 × 0.6 = 0.06	72
	26	1,560	480	1,080	0.1 × 0.4 = 0.04	43.2
Units 70,000	28	1,960	640 (400+160+80)	1,320	0.7 × 0.6 = 0.42	554.4
	26	1,820	640	1,180	0.7 × 0.4 = 0.28	330.4
Units 90,000	28	2,520	640	1,880	0.2 × 0.6 = 0.12	225.6
	26	2,340	640	1,700	0.2 × 0.4 = 0.08	136
						1,361.60

Units	Contribution	Total Contribution (₹ 000)	HMA (₹ 000)	Net Contribution (₹ 000)	Probability	Expected Value (₹ 000)
Selling Price ₹40						
Units 30,000	30	900	480 (400+80)	420 (900-480)	0.4 × 0.6 = 0.24	100.8
	28	840	480	360	0.4 × 0.4 = 0.16	57.6
Units 60,000	30	1,800	480	1,320	0.5 × 0.6 = 0.30	396
	28	1,680	480	1,200	0.5 × 0.4 = 0.20	240
Units 70,000	30	2,100	640 (400+160+80)	1,460	0.1 × 0.6 = 0.06	87.6
	28	1,960	640	1,320	0.1 × 0.4 = 0.04	52.8
						934.80

Note: Contribution per unit with variable cost per unit of ₹10 or ₹12

Analysis – Selling price of ₹40 should not be set. Out of ₹36 and ₹38, selling price ₹38 is suggested to fix, since the expected value of contribution is greater than other alternative price of ₹36 and ₹40.

3. (a) The earnings per share of a company is ₹ 10 and the rate of capitalisation applicable to it is 10 per cent. The company has three options of paying dividend i.e. (i) 50%, (ii) 75% and (iii) 100%. Calculate the market price of the share as per Walter's model if it can earn a return of (a) 15, (b) 10 and (c) 5 per cent on its retained earnings. [3+3+3]

(b) Enumerate the main features of Venture Capital. [6]

Answer:

3. (a) $P = \dfrac{D + \frac{r}{ke}(E - D)}{ke}$

Where

P = Price of Share
R = rate of Earning
Ke = rate of Capitalisation or Cost of Equity

		(i)	(ii)	(iii)
		DP ratio 50%	DP ratio 75%	DP ratio 100%
(a)	Price of Share if r =15%	$\frac{5+\left(\frac{.15}{.10}\right)(10-5)}{.10}$ $\frac{12.5}{.10}$ ₹125	$\frac{7.5+\left(\frac{.15}{.10}\right)(10-7.5)}{.10}$ $\frac{11.25}{.10}$ ₹112.5	$\frac{10+\left(\frac{.15}{.10}\right)(10-10)}{.10}$ $\frac{10}{.10}$ ₹100
(b)	Price of Share if r = 10%	$\frac{5+\left(\frac{.10}{.10}\right)(10-5)}{.10}$ $\frac{10}{.10}$ = ₹100	$\frac{7.5+\left(\frac{.10}{.10}\right)(10-7.5)}{.10}$ $\frac{10}{.1}$ = ₹100	$\frac{10+\left(\frac{.10}{.10}\right)(10-10)}{.10}$ $\frac{10}{.1}$ = ₹100
(c)	Price of Share if r = 5%	$\frac{5+\left(\frac{.05}{.10}\right)(10-5)}{.10}$ $\frac{7.5}{.10}$ = ₹75	$\frac{7.5+\left(\frac{.05}{.10}\right)(10-7.5)}{.10}$ $\frac{8.75}{.10}$ = ₹87.5	$\frac{10+\left(\frac{.05}{.10}\right)(10-10)}{.10}$ $\frac{10}{.1}$ = ₹100

(b) The main features of Venture Capital are enumerated below:

(i) **High Degree of risk:** Venture capital financing is, invariably, an investment in a highly risky project with the objective of earning a high rate of return.

(ii) **Equity Participation:** Venture Capital financing is, invariably, an actual or potential equity participation wherein the object of venture capital is to make capital gain by selling the share once the project become profitable.

(iii) **Long term investment:** Venture capital financing is a long term investment. It generally takes a long period to encash the investment in securities made by the venture capitalists.

(iv) **Participation in Management**: In addition to provide capital, venture capital funds take an active interest in the management of the form that of a traditional lender or banker. It is also different from that of accompany stock market investor who merely trades in the shares of a company without participating in their management. It has been rightly said, "Venture capital combines the qualities of banker, stock market investor and entrepreneur in one".

(v) **Achieve Social Objectives:** It is different from the development capital provided by several central and state level government bodies in that the profit objective is the motive behind the financing. But venture capital profits generate employment, and balanced regional growth indirectly due to setting up successful new business.

(vi) **Investment is Illiquid:** A venture capital is not subject to repayment on demand as with an overdraft or following a loan repayment schedule. The investment is realized only when the company is sold or achieves a stock market listing. It is lost when the company goes into liquidation.

4. (a) The data relating to two companies are as given below:

	Company A	**Company B**
Equity Capital	**₹6,00,000**	**₹3,50,000**

12% Debentures	**₹4,00,000**	**₹6,50,000**
Output (units) per annum	**60,000**	**15,000**
Selling price/unit	**₹30**	**₹250**
Fixed Costs per annum	**₹7,00,000**	**₹14,00,000**
Variable Cost per unit	**₹10**	**₹75**

You are required to calculate the Operating leverage, financial leverage and combined leverage of two companies. [3+3]

(b) Sun Ltd. discounts its cash flows at 16% and is in the tax bracket of 35%. For the acquisition of a machinery worth ₹10,00,000, it has two options - either to acquire the asset by taking a bank loan @ 15% p.a. repayable in 5 yearly installments of ₹2,00.000 each plus interest or to lease the asset at yearly rentals of ₹3,34,000 for five (5) years. In both the cases, the installment is payable at the end of the year. Depreciation is to be applied at the rate of 15% using 'written down value' (WDV) method. You are required to advise which of the financing options is to be exercised and why.

Year	1	2	3	4	5
P.V factor @16%	**0.862**	**0.743**	**0.641**	**0.552**	**0.476**

[9]

Answer:

4. (a) Computation of degree of Operating leverage, financial leverage and combined leverage of two companies

	Company A	**Company B**
Output units per annum	60,000	15,000
	₹	₹
Selling price/unit	30	250
Sales revenue (S)	18,00,000	37,50,000
	(60,000 units × ₹30)	(15,000 units × ₹250)
Less: Variable Costs(VC)	6,00,000	11,25,000
	(60,000 units× ₹10)	(15,000 units × ₹75)
Contribution(C=S-VC)	12,00,000	26,25,000
Less: Fixed Costs(FC)	7,00,000	14,00,000
EBIT(C-FC)	5,00,000	12,25,000
Less: Interest 2 12% on debentures	48,000	78,000
PBT	4,52,000	11,47,000

	Company A	**Company B**
$DOL = \frac{C}{EBIT}$	2.4 (₹12,00,000 /₹5,00,000)	2.14 (₹26,25,000/₹12,25,000)
$DFL = \frac{EBIT}{PBT}$	1.11 (₹5,00,000/₹4,52,000)	1.07 (₹12,25,000/₹11,47,000)
DCL= DOL × DFL	2.66 (2.4 × 1.11)	2.29 (2.14 1.07)

(b) Alternative I: Acquiring the asset by taking bank loan:

Years		**1**	**2**	**3**	**4**	**5**
(a)	Interest (@15% p.a., on opening balance)	1,50,000	1,20,000	90,000	60,000	30,000
	Depreciation (@15%WDV)	1,50,000	1,27,500	1,08,375	92,119	78,301

		3,00,000	2,47,500	1,98,375	1,52,119	1,08,301
(b)	Tax shield (@35%)	1,05,000	86,625	69,431	53,242	37,905
	Interest less Tax shield (a)-(b)	45,000	33,375	20,569	6,758	(-)7,905
	Principal Repayment	2,00,000	2,00,000	2,00,000	2,00,000	2,00,000
	Total cash outflow	2,45,000	2,33,375	2,20,569	2,06,758	1,92,095
	Discounting Factor @ 16%	0.862	0.743	0.641	0.552	0.476
	Present Value	2,11,190	1,73,398	1,41,385	1,14,130	91,437

Total P.V of cash outflow = ₹731,540

Alternative II: Acquire the asset on lease basis

Year	Lease Rentals (₹)	Tax Shield @35%	Net Cash Outflow	Discount Factor	Present Value
1	3,34,000	1,16,900	2,17,100	0.862	1,87,140
2	3,34,000	1,16,900	2,17,100	0.743	1,61,305
3	3,34,000	1,16,900	2,17,100	0.641	1,39,161
4	3,34,000	1,16,900	2,17,100	0.552	1,19,839
5	3,34,000	1,16,900	2,17,100	0.476	1,03,340
Present value of Total Cash out flow					7,10,785

Advice -By making Analysis of both the alternatives, it is observed that the present value of the cash outflow is lower in alternative II by ₹20,755(i.e. ₹731,540 - ₹7,10,785) Hence, it is suggested to acquire the asset on lease basis.

5. JKL Ltd. has the following book-value capital structure as on March 31, 2013.

	₹
Equity share capital (2,00,000 shares)	**40,00,000**
11.5% preference shares	**10,00,000**
10% debentures	**30,00,000**
	80,00,000

The equity share of the company sells for ₹20. It is expected that the company will pay next year a dividend of ₹ 2 per equity share, which is expected to grow at 5% p.a. forever. Assume a 35% corporate tax rate.

Required:

(i) Compute weighted average cost of capital (WACC) of the company based on the existing capital structure.

(ii) Compute the new WACC, if the company raises an additional ₹20 lakhs debt by issuing 12% debentures. This would result in increasing the expected equity dividend to ₹2.40 and leave the growth rate unchanged, but the price of equity share will fall to ₹16 per share.

(iii) Comment on the use of weights in the computation of weighted average cost of capital.

[15]

Answer:

5.

(i)

Weighted Average Cost of Capital of the Company
(Based on Existing Capital Structure)

	After tax cost (a)	Weights (Refer to working note 4) (b)	Weighted cost (a) X (b)
Equity share capital cost (Refer to working note 1)	0.15	0.50	0.075
Cost of preference share capital @11.5% (Refer to working note 2)	0.115	0.125	0.014375
Cost of debentures (Refer to working note 3)	0.065	0.375	0.02437
Weighted average cost of capital			11.375%

Working Notes:

1. Cost of equity capital:

$$K_e = \frac{\text{Dividend}}{\text{Current market price of share}} + g$$

$$= \frac{₹2}{₹20} + 5\% = 15\% \text{ or } 0.15$$

2. Cost of preference share capital:

$$= \frac{\text{Annual preference share dividend}}{\text{Net proceeds in the issue of preference share}}$$

$$= \frac{₹1,15,000}{₹10,00,000} = 0.115$$

3. Cost of Debentures:

$$= \frac{1}{\text{Net proceeds}}(\text{Interest} - \text{Tax})$$

$$= \frac{1}{₹30,00,000}(₹3,00,000 - ₹1,05,000)$$

$$= 0.065$$

4. Weights of equity share capital, preference share capital and debentures in total investment of ₹80,00,000:

$$\text{Weight of equity share capital} = \frac{\text{Total equity share capital}}{\text{Total investments}}$$

$$= \frac{₹40,00,000}{₹80,00,000} = 0.50$$

$$\text{Weight of preference share capital} = \frac{\text{Total preference share amount}}{\text{total investments}}$$

$$= \frac{₹10,00,000}{₹80,00,000} = 0.125$$

$$\text{Weight of debentures} = \frac{\text{Total debentures}}{\text{Total investments}}$$

$$= \frac{₹30,00,000}{₹80,00,000} = 0.375$$

(ii) New Weighted Average Cost of Capital of the Company
(Based on new capital structure)

	After tax cost (a)	Weights (Refer to working note 4) (b)	Weighted cost (a) x (b)
Cost of equity share capital (Refer to working note 2)	0.20	0.40	0.080
Cost of preference share	0.115	0.10	0.0115
Cost of debentures @10%	0.065	0.30	0.0195
Cost of debentures @12%	0.078	0.20	0.0156
Weighted average cost of capital			12.66%

Working Notes:

1. Weights of equity share capital, preference share and debentures in total investment of ₹100,00,000

Weight of equity share capital $= \frac{₹40,00,000}{₹1,00,00,000} = 0.4$

Weight of preference share capital $= \frac{₹10,00,000}{₹1,00,00,000} = 0.1$

Weight of debentures @ 10% $= \frac{₹30,00,000}{₹1,00,00,000} = 0.30$

Weight of debentures @12% $= \frac{₹20,00,000}{₹1,00,00,000} = 0.20$

2. Cost of equity capital:

$$K_e = \frac{\text{Dividend}}{\text{Current market price of share}} + g = \frac{₹2.40}{₹16} + 5\% = 20\%$$

(iii) **Comment:** In the computation of weighted average cost of capital weights are preferred to book value. For example, weights representing the capital structure under a corporate financing situation, its cash flows are preferred to earnings and market. Balance sheet is preferred to book value balance sheet.

6. (a) How is Economic Value Added (EVA) different from Market Value Added (MVA) ? [5]

(b) The management of MNP Company Ltd. is planning to expand its business and consults you to prepare an estimated working capital statement. The records of the company reveal the following annual information:

	₹
Sales – Domestic at one month's credit	**24,00,000**
Export at three month's credit (sales price 10% below domestic price)	**10,80,000**
Materials used (suppliers extend two months credit)	**9,00,000**
Lag in payment of wages - ½ month	**7,20,000**
Lag in payment of manufacturing expenses (cash) – 1 month	**10,80,000**
Lag in payment of Adm. Expenses – 1 month	**2,40,000**
Sales promotion expenses payable quarterly in advance	**1,50,000**
Income tax payable in four installments of which one falls in the new financial year	**2,25,000**

Rate of gross profit is 20%.

Ignore work-in-progress and depreciation.

The company keeps one month's stock of raw materials and finished goods (each) and believes in keeping ₹ 2,50,000 available to it including the overdraft limit of ₹ 75,000 not yet utilized by the company.

The management is also of the opinion to make 12% margin for contingencies on computed figure.
You are required to prepare the estimated working capital statement for the next year. **[10]**

Answer:

6. (a) MVA is the excess of market value of the firm as reflected in share price and the value of the debt, over the book value of the capital employed. This book value of the capital employed includes the value of reserves and surplus. The MVA is considered a better measure of corporate performance than the market capitalization.
Mathematically, MVA = Market value of the firm – Capital Employed
EVA can be defined from two perspectives – (a) Accounting and (b) Finance
From the accounting perspective, EVA is defined as the difference between the firm's net operating profits after tax (NOPAT) and its weighted average rupee cost of capital
Since EVA fully accounts for the firm's overall capital costs, it differs from the traditional metrics of financial performance such as EBIT, EBITDA, EAT etc.
Mathematically, EVA = NOPAT – Capital Cost
= NOPAT – (WACC X Capital Employed)
= (r x Capital Employed – c x Capital Employed)

Thus, EVA = (r-c) x Capital Employed

(b)

Preparation of Statement of Working Capital Requirement for MNP Company Ltd.
Estimated Working Capital Statement

(A)	Current Assets in terms of Cash Costs	₹
	Debtors: Domestic Sales $\frac{1}{12}$ x 19,20,000	1,60,000
	Export Sales $\frac{3}{12}$ x 9,60,000	2,40,000
	Prepaid Sales promotion expenses	37,500
	Stock of Raw materials $\frac{1}{12}$ x 9,00,000	75,000
	Stock of finished goods $\frac{1}{12}$ x 28,80,000	2,40,000
	Cash at Bank and in Hand	1,75,000
	Total Current Assets	9,27,500
(B)	Current Liabilities in terms of Cash Costs	₹

	Creditors for:	
	Material $\frac{2}{12}$ x 9,00,000	1,50,000
	Wages $\frac{1}{24}$ x 7,20,000	30,000
	Manufacturing expenses $\frac{1}{12}$ x 10,80,000	90,000
	Administrative expenses $\frac{1}{12}$ x 2,40,000	20,000
	Income Tax Payable	56,250
	Total Current Liabilities	3,46,250
(C)		₹
	Net Current Assets (A-B)	5,81,250
	Add: 12% margin for contingencies	69,750
	Required Working Capital	6,51,000

Working Notes:

Cash cost of sales is calculated as under:	₹	₹
Domestic Sales	24,00,000	
Less: Gross profit @ 20%	4,80,000	19,20,000
Expert Sales	10,80,000	
₹ $\frac{10,80,000}{90}$ = 12,00,000 @ 10%	1,20,000	9,60,000
		28,80,000

7. (a) The spot rate is $ 1.65 / £. The expected inflation rates in UK and USA for the next three years are given below:

Year	UK Inflation (%)	US Inflation (%)
1	3.0	2.0
2	3.5	2.5
3	3.0	2.0

Calculate the expected $/£ spot after three years. [4]

(b) On November 17, Mr. X bought one future contract for CAD 1,00,000 each, at a rate of USD/CAD 0.8657. A 5% initial margin was deposited and no maintenance margin is available. The subsequent settlement prices are shown in the table below.

November	18	19	20	21	24	25	26	27
Futures Rate	0.84	0.83	0.84	0.86	0.87	0.88	0.89	0.90

(i) What are the daily cash flows from marking to market?

(ii) What is the total cash flow from marking to market? [1+4]

(c) A company in UK sends 2000 pieces to its subsidiary in US, each piece worth £ 5000.The payment in £ would have to be made by the subsidiary at the end of 3 months. The finance manager of the subsidiary wishes to have protection against the uncertainty. It is given that:

Spot £ 1 = $ 1.8306; 90 days forward £ 1= $ 1.8350.

90 days $ interest = 5.25%, 90 days £ 1interest=4.75%

Call option on £ with a strike of 1.8347 is available with a premium of 1.5324%. The expected spot rate at expiry would be 1.8405. What are the options available to the financial manager, including remaining un-hedged. [6]

Answer:

7. (a) Today, £1 and $ 1.65 can both buy the same basket of goods if we apply Purchasing Power Parity (PPP).
The same basket of goods will have the following price after three years.
In UK – (1) (1.030) (1.035) (1.030) = £ 1.098.
In USA – (1.65) (1.020) (1.025) (1.020) = $ 1.760.
If we apply PPP again, £ 1.098 = $ 1.760.
So, £1 = $ 1.603.
Hence, the expected spot rate after three years is $ 1.603 / £.

(b) Original Trade: Buy One CAD Futures at 0.8657[each contract = 1,00,000]

November	Futures Rate	Mark to Market Loss/ Gain	Gain/ Loss In value	Balance
18	Deposit of initial margin	=100000×0.8657×5%		4328.50
18	0.84	-0.0257	-2570	1758.50
19	0.83	-0.01	-1000	758.50
20	0.84	+0.01	+1000	1758.50
21	0.86	+0.02	+2000	3758.50
24	0.87	+0.01	+1000	4758.50
25	0.88	+0.01	+1000	5758.50
26	0.89	+0.01	+1000	6758.50
27	0.90	+0.01	+1000	7758.50
	Total cash flow from Marking to Market		+3430	

(c) Option I (Remain un-hedged)
If the expected spot rate after 90 days is 1.8405, the total outgo for the subsidiary
= 2000 × 5000 × 1.8405
= $ 18.405 million
Option II (Hedge using forwards)
The given forward rate £ 1= $ 1.8350
The outlay for the subsidiary
= 2000 × 5000 × 1.8350
= $ 18.350 million
Option III (Hedge using options)
Since the subsidiary has to make payment of pounds, it will buy a call option on pounds at a strike of 1.8347. Premium = 1.5324% of 1.8347 = 0.02811/pound. If the expected spot rate at expiry would be 1.8405, then the call option would be exercised and the profit =1.8405-1.8347-0.0811= -0.02231. Obviously going for call option, results in a loss.

8. (a) Write short note on GATT. [5]
(b) State the two components of value of currency option. Show a relationship between volatility of currency and option value. [5]
(c) How does "Risk Adjusted Discount Rate" differ from "Certainty Equivalent Approach" As techniques of risk analysis in capital budgeting? [5]

Answer:

8. (a) (i) GATT was a treaty, not an organization.
(ii) Main objective of GATT was the reduction of barriers to international trade through the reduction of tariff barriers, quantitative restrictions and subsidies on trade through a series of agreements.
(iii) It is the outcome of the failure of negotiating governments to create the International Trade Organization (ITO).
(iv) The Bretton Woods Conference had introduced the idea for an organization to regulate trade as part of a larger plan for economic recovery after World War II. As governments negotiated the ITO, 15 negotiating states began parallel negotiations for the GATT as a way to attain early tariff reductions. Once the ITO failed in 1950, only the GATT agreement was left.
(v) The functions of the GATT were taken over by the World Trade Organization which was established during the final round of negotiations in early 1990s.

(b) Relationship between volatility of currency and option value may be explained as follows:
(i) The intrinsic value: The amount by which an option is in the money. A call option whose exercise price is below the current spot price of the underlying instrument, or a put option whose exercise price is above the current spot price of the underlying instrument, is said to be in the money.
(ii) The extrinsic value: It is the total premium of an option less the intrinsic value. It is also known as the time value or volatility value. As per the expiry time increases, the premium of an option also increases. However, with each passing day, the rate of increase in the premium decreases. Conversely, as an option approaches expiry, the rate of decline in its intrinsic value increases. This decline is known as the time decay. Therefore, the more volatile a currency, the higher will be its option value.

(c) Both the Risk Adjusted Discount Rate (RADR) and the Certainty Equivalents (CE) Approaches attempt to incorporate project risk. However, the way of approach differs. The RARD is concerned with the denominator- it increases the discount rate of the NPV formula. The CE deflates the cash flows and deals with the numerator of the NPV formula.
For RADR the discount rate is a constant one over the life of the project, for CE different degrees of risk are taken care of the different years of the project life. The RARD tends to club together the risk free rate, the risk involved and the risk premium, while the CE approach maintains a distinction between the risk free rate and the risk. In CE the discount rate is risk free as the risk is adjusted by reducing the numerator- the cash flow.