Paper 14 – Strategic Financial Management

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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 marks]

(i) A mutual Fund had a Net Asset Value (NAV) of ₹72 at the beginning of the year. During the year, a sum of ₹6 was distributed as Dividend besides ₹ 4 as Capital Gain distributions. At the end of the year, NAV was ₹ 84. Total return for the year is:

(A) 33.65%
(B) 30.56%
(C) 32.65%
(D) 31.46%

(ii) The following two types of securities are available in the market for investment:

Security	Return %	Standard Deviation%
Gilt-edge Security	7	0
Equity	25	30

Using the above two securities, if you are planning to invest ₹1,00,000 to construct a portfolio with a standard deviation of 24%, what is the return of such portfolio?

(A) ₹21700
(B) ₹21600
(C) ₹21500
(D) ₹21400

(iii) A characteristic line is formed by regressing

(A) Stock prices with market index
(B) Beta with required rate of return
(C) Standard deviation with required rate of return
(D) Stock returns with market returns

(iv) Which of the following is not a source of systematic risk?

(A) Market risk
(B) Interest rate risk
(C) Purchasing power risk
(D) Financial risk

(v) A Call Option at a strike price of ₹ 280 is selling at a premium of ₹23. At what share price on maturity will it break-even for the buyer of the option?

(A) ₹303/-

(B) ₹257/-

(C) ₹300/-

(D) ₹280/-

(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) Following information is available regarding a mutual fund:

Return	**13**
Risk (σ)	**16**
Beta (β)	**0.90**
Risk free rate	**10**

Calculate Sharpe ratio.

(A) 0.18

(B) 0.19

(C) 0.20

(D) 0.21

(x) A project had an equity beta of 1.3 and was going to be financed by a combination of 30% debt and 70% equity. Assuming debt-beta to be zero, calculate the project beta and return from the project taking risk free rate of return to be 10% and return on market portfolio of 18%.

(A) 17.28%

(B) 18.28%

(C) 19.28%

(D) 16.28%

Answer:

1. (i) (B) 30.56%

Capital Appreciation = Closing NAV- Opening NAV = 84 - 72 = ₹12.

Return = [Cash Dividend +Capital Gain + Capital Appreciation] /Opening NAV

=[6+4+12]/72 = 22/72 = 0.3056 = 30.56%.

(ii) (D) ₹21400

We have the formula: $\sigma_P^2 = w^2_1\sigma_1^2 + w^2_2\sigma_2^2 + 2w^2_1 w^2_2 \sigma_1\sigma_2$

Since, Standard Deviation of Gilt-edged security is 0 and its co-relation with the Equity is also 0. The formula

Will reduce to: $\sigma_P^2 = w^2_2\sigma_2^2$; or, $\sigma_P = w_2\sigma_2$; or, 24% = $w_2 \times 30\%$;

Or, $w_2 = 24\%/30\% = 0.24/0.30 = 0.8$

We also know, Return of portfolio [R_P] = $W_1R_1 + W_2R_2 = (1 - W_2)\ R_1 + W_2R_2$

$=(1 - 0.8) \times 7\% + 0.8 \times 25\% = (0.2 \times 0.07) + (0.8 \times 0.25) = 0.214$

Therefore, return in Rupees = 1,00,000 × 0.214 = ₹21,400

(iii) (C) Standard deviation with required rate of return

Characteristic Line is a graph depicting the relationship between Security' Returns and Market Index Returns.

(iv) (D) Financial risk

Financial risks arises when companies resort to financial leverage or use of debt financing. The more the company resorts to debt finance, the greater is the financial risk. Financial risk is an unsystematic risk, which can be diversified.

(v) (A) ₹303/-

To recover Call Option Premium of ₹ 23, the share price on the date of expiration should rise to [₹ 23 + ₹ 280] = ₹ 303.

The buyer of the Call Option would be at break-even if the share price (S_1) ends up at ₹ 303.

(vi) (D) 0.0850%

% spread on Euro/Pound rate = $\frac{1.6557 - 1.6543}{1.6543} \times 100$

(vii) (A) 1.51

P: v. of inflows = 6.00 × 5.019 = ₹30.114 lakhs

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

(viii) (B) ₹ 89,41,680

P. V. of lease rentals = ₹18 lakhs × PVI FA (12%, 8)

= ₹18 lakhs × 4.9676

= ₹89,41,680

(ix) (B) 0.19

Sharpe's ratio = $(R_P - R_F) / \sigma$ = [13 -10] / 16 = 0.19

(x) (A) 17.28%

B_p is to be ascertained as -

= [β_{equity} + E / (D +E)] + [β_{debt} + E /(D + E)] = (1.30 × 0.70) + (0 × 0.3) =0.91

Computation of return from the project = $R_F + B_p (R_M - R_F)$ = 0.10 + 0.91 × (0.18 - 0.10)

= 0.1728 = 17.28 %.

Section – B

Answer any five questions from question nos. 2 to 8. Each question carries 16 marks.

2. (a) SHREE LEATHERS LTD. has an investment proposal, requiring an outlay of ₹40,000. The investment proposal is expected to have 2 years' economic life with no salvage value. In year 1, there is a 0.4 probability that Cash Flow After Tax (CFAT) will be ₹ 25,000 and 0.6 probability that CFAT will be ₹ 30,000.

The probabilities assigned to CFAT for the year 2 are as follows:

If CFAT = ₹ 25,000		If CFAT = ₹ 30,000	
Amount (₹)	**Probability**	**Amount (₹)**	**Probability**
12,000	**0.2**	**20,000**	**0.4**
16,000	**0.3**	**25,000**	**0.5**
22,000	**0.5**	**30,000**	**0.1**

SHREE LEATHERS LTD. uses a 10% discount rate for this type of investment. Required:

(i) Construct a decision tree for the proposed investment project.

(ii) What Net Present Value (NPV) will the project yield if worst outcome is realised? What is the probability of occurrence of this NPV?

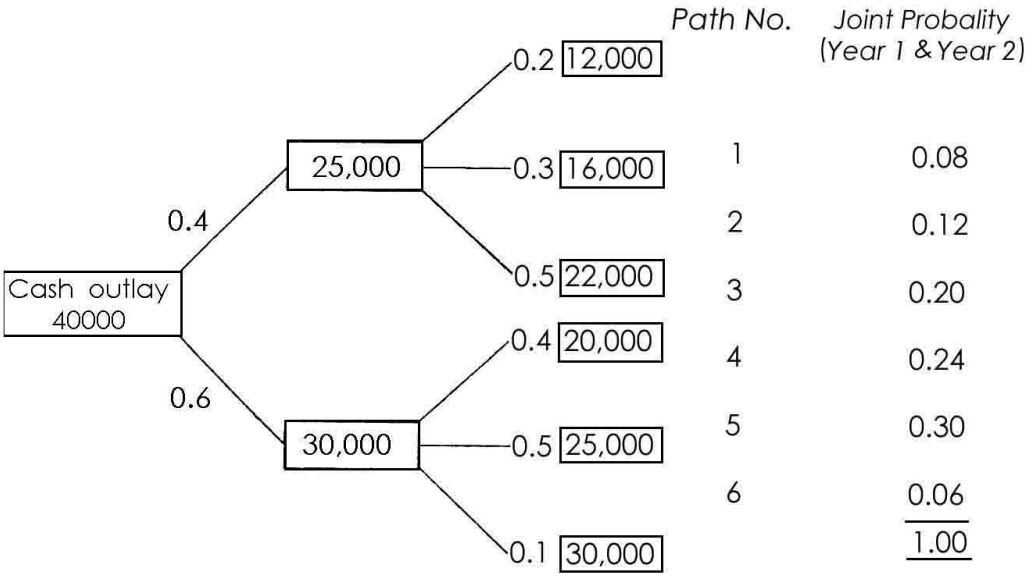
(iii) What will be the best and the probability of that occurrence?

(iv) Will the project be accepted? [10% discount factor: Year 1 = 0.909 and Year 2 = 0.826]

(b) Megatron LTD. paid a dividend of ₹2.60 during the last year and the growth rate in the dividends are expected to be 8%. The current market price of the stock is ₹30.00. The beta of the stock is 1.60 and the return on the market index is 13%. If the risk free-free rate of return is 8%, by how much should the price of the stock be raised in percentage terms so that it is at equilibrium? [10+6]

Answer:

2. (a) i. Decision Tree:



The decision tree shows that there are six possible outcomes each represented by a path.

Net present value at 10% discount rate is as under:

(Amount in ₹)

Path	Cash inflow yr 1 x Discount factor [0.909] [a]	Cash inflow yr.2 x Discount factor [0.826] [b]	Total cash Inflow [c] = [a] + [b]	Cash Outflow [d]	Net present value [e] = [c] – [d]
1.	25,000 x 0.909 = 22,725	12,000 x 0.826 = 9,912	32,637	40,000	(-) 7,363
2.	25,000 x 0.909 = 22,725	16,000 x 0.826 = 13,216	35,941	40,000	(-) 4,059
3.	25,000 x 0.909 = 22,725	22,000 x 0.826 = 18,172	40,897	40,000	897
4.	30,000 x 0.909 = 27,270	20,000 x 0.826 = 16,520	43,790	40,000	3,790
5.	30,000 x 0.909 = 27,270	25,000 x 0.826 = 20,650	47,920	40,000	7,920
6.	30,000 x 0.909 = 27,270	30,000 x 0.826 = 24,780	52,050	40,000	12,050

ii. If the worst outcome is realized, NPV which the project will yield is ₹ 7,363 (negative). The probability of occurrence of this NPV is 8%

iii. The best outcome will be path 6 when NPV is highest i.e., ₹12,050 (positive). The probability of occurrence of this NPV is 6%

Statement showing the Expected NPV: (Amount in ₹)

Path	NPV @ 10%	Joint probability	Expected PV
1	(-) 7,363	0.08	(-) 589.04
2	(-) 4,059	0.12	(-) 487.08
3	897	0.20	179.40
4	3,790	0.24	909.60
5	7,920	0.30	2,376.00
6	12,050	0.06	723.00
		1.00	3,111.88

iv. Yes, the project will be accepted since Expected NPV is POSITIVE.

(b) The required rate of Return: $R_f + \beta (R_m - R_f) = 8 + 1.6 (13 - 8) = 16\%$

Expected rate of Return: $[D_o (1 + g) / p_o] + g$

$= [2.60 (1 + 0.08) / 30] 0.08$

$= 17.36\%$

At equilibrium, the required rate of return is equal to the expected rate of return.

$0.16 = [2.60 (1.08) / P_o] + 0.08$

Or, $0.08P_o = 2.808$

Or, $P_o = 2.808/0.08 =$ ₹ 35.10

Hence the price should be increased by ₹ 5.10 (35.10 – 30.00) or 17.00%

So that it is at equilibrium.

3. (a) A mutual fund made an issue of 800000 units of ₹10 each on 01.04.2017. No entry load was charged. It made the following investments after meeting its issue expenses.

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

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 31.03.2018, 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.

(i) Find out the Net Assets Value (NAV) per unit at the end of the year.

(ii) Find out the NAV if the Mutual Fund had distributed a dividend of ₹0.90 per unit during the year to the unit holders.

(b) The following particulars are furnished about three Mutual Fund schemes P, Q and R:

Particulars	Scheme P	Scheme Q	Scheme R
Dividend distributed (₹)	**1.75**	**—**	**1.30**
Capital appreciation (₹)	**2.97**	**3.53**	**1.99**
Opening NAV (₹)	**32.00**	**27.15**	**23.50**
Beta	**1.46**	**1.10**	**1.40**

Ascertain the Alpha of the three schemes and evaluate their performance, if Govt. of India Bonds carry an interest rate of 6.84% and the Nifty has increased by 12.13%. [8+8]

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
Total	78,40,000	5,60,000	84,00,000	10,87,200

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)

Particulars		Scheme P	Scheme Q	Scheme R
Dividend distributed	(₹)	1.75	-	1.30
Add: Capital appreciation	(₹)	2.97	3.53	1.99
Total return (A)	(₹)	4.72	3.53	3.29
Opening NAV (B)	(₹)	32.00	27.15	23.50
Actual return (A)/(B) = (C)		14.75 %	13.00%	14.00%
Beta (D)		1.46	1.10	1.40
Expected return under CAPM:				
$R_F+\beta_P(R_M-R_F)$ = (E)		14.56 %	12.66 %	14.25%
Jensen's Alpha = (C) - (E)		0.19 %	0.34 %	(-) 0.25%
Ranking		2	1	3

Evaluation: Schemes P and Q have outperformed the Market portfolio NIFTY, whereas Scheme R has under-performed in comparison with NIFTY.

4. (a) X 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. 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.?

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%?

(b) An investor has two portfolios known to be on minimum variance set for a population of three securities R, S and T, having below-mentioned weights:

	W_R	W_S	W_T
Portfolio X	**0.30**	**0.40**	**0.30**
Portfolio Y	**0.20**	**0.50**	**0.30**

Assume that there are no restrictions on short sales.

Required:

(i) What would be the weight for each stock for a portfolio constructed by investing ₹ 6,000 in Portfolio X and ₹ 4,000 in Portfolio Y?

(ii) Suppose the investor invests ₹ 5,000 out of ₹10,000 in Security R. How will he allocate the balance between Security S and T to ensure that his portfolio is on minimum variance set? [8+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 24% 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.

(ii) $R_{AB} = (0.22 \times 0.7) + (0.24 \times 0.3) = 22.6\%$

$\sigma_{AB} = (0.40^2 \times 0.7^2) + (0.38^2 + 0.3^2) + (2 \times 0.7 \times 0.3 \times 0.72 \times 0.40 \times 0.38)$

$= (0.16 \times 0.49) + (0.1444 \times 0.09) + 0.0459648 = 0.078 + 0.0112996 + 0.0459648$

$= 0.1374$

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

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

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	$= (R_m - R_f)\ (-0.38)$	Therefore $R_m - R_f$ = -2/-0.38 = 5.26%
R_A	= 22	$= R_f + (5.6)\ 0.86$	Therefore R_f = 17.5%
R_B	= 24	$= R_f + (5.26)\ 1.24$	Therefore R_f = 17.5%
$R_m - 17.5$		= 5.26	Therefore R_m = 22.76%

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

(b) (i) Investment in individual securities:

Security	Portfolio X (₹)	Portfolio Y (₹)	Total (₹)	Weight
R	6,000 x 0.30 = 1,800	4,000 x 0.20 = 800	2,600	2,600/10,000 = 0.26
S	6,000 x 0.40 = 2,400	4,000 x 0.50 = 2,000	4,400	4,400 / 10,000 = 0.44
T	6,000 x 0.30 = 1,800	4,000 x 0.30 = 1,200	3,000	3,000 / 10,000 = 0.30
	6,000	4,000	10,000	1.00

(ii) Investment strategy: Given, W_R = ₹ 5,000 / ₹10,000 = 0.50; and $W_R + W_S + W_T = 1$.
Hence, $W_T + W_s = 0.50$; We can establish a simple linear equation like-
$W_T = a + b\ W_s$; From the given data, we get-
$0.30 = a + b \times 0.40$ and $0.30 = a + b \times 0.50$; Solving, we get b = 0; a = 0.30
$W_T = 0.30 - 0 \times W_s$; or, $W_T = 0.30$; Hence, $W_s = 0.20$
Allocation of funds: R=₹5,000; S=0.20 × 10,000=₹2,000; and T=0.30 x ₹10,000 = ₹ 3,000.

5. (a) From the following data for Government Securities:

Face Value (₹)	Interest rate (%)	Maturity Year	Current Price (₹)
1,00,400	**0**	**1**	**91,900**
1,00,400	**10**	**2**	**98,900**
1,00,400	**10.5**	**3**	**99,400**

Calculate the forward rates.

(b) Determine the value of option, both call and put, on expiry for the stock of Nirmal Spice Foods (NSF) Ltd. from the following information:
Exercise Price ₹510

Spot price on exercise date ranges between ₹495 and ₹525 with interval of ₹5.

Also state what will be the action on the above range of prices for both the options. [10+6]

Answer:

5. (a)

1. Computation of Zero rates [Implied interstate time zero] [under annual compounding]

Particulars	1 year Bond	2 year Bond	3 year Bond
Current market price (a)	₹ 91,900	₹98,900	₹ 99,400
Redemption price [assumed at par value]	₹ 1,00,400	₹ 1,00,400	₹ 1,00,400
Capital gain (b)	₹8,500	₹ 1,500	₹ 1,000
Rate of interest	0%	10%	10.50 %
Annual interest inflow	-	₹ 10,040	₹ 10,542
Period of bond (c)	1 year	2 year	3 year
Total interest inflow (d)	Nil	₹ 20,080	₹ 31,626
Total income to a Bondholder (e = B + d)	₹ 8,500	₹ 21,580	₹ 32,626
Income per annum (f = e / c)	₹ 8,500	₹ 10,790	₹ 10,875
Implied interest rate (f/a)	9.25 %	10.91 %	10.94%

2. Computation of Forward rates

(i) Forward rate for year 1 = Implied interest rate for one year bond = 9.25%

(ii) Forward rate for year 2:

Factor	Notation	Value
Zero rate for 1 year bond	R_1	9.25 %
Zero rate for 2 year bond	R_2	10.91 %
Tenor of bond 1	T_1	1
Tenor of bond 2	T_2	2
forward rate for year 2 =$[R_2 T_2 – R_1 T_1]/(T_2 –T_1)$		
={[10.91 × 2] - [9.25 × 1]} /[2-1] = 12.57 %	R_F	12.57%

(iii) Forward rate for year 3:

Factor	Notation	Value
Zero rate for 2 year bond	R_2	10.91 %
Zero rate for 3 year bond	R_3	10.94 %
Tenor of bond 2	T_2	2
Tenor of bond 3	T_3	3
forward rate for year 3 =$[R_3 T_3 – R_2 T_2]/(T_3 –T_2)$		
={[10.94 × 3] - [10.91 × 2]} /[3- 2] = 11.00 %	R_{F3}	11.00%

(b) Call option [Right to buy]:

Situation	Exercise price (₹)	Spot price on Expiry date (₹)	Value of call [Maximum of SP & EP (₹) {[SP – EP], O}	Action
A	510	495	495-510 = (-)15 → 0	Lapse
B	510	500	500 - 510 = (-) 10 → 0	Lapse
C	510	505	505 - 510 = (-) 5 → 0	Lapse
D	510	510	510-510 = 0 → 0	Lapse
E	510	515	515-510 = 5 → 5	Exercise
F	510	520	520-510 = 10→ 10	Exercise
G	510	525	525-510 = 15→ 15	Exercise

Put option [Right to sell]:

Situation	Exercise price (₹)	Spot price on Expiry date (₹)	Value of call [Maximum of EP & SP (₹) {[EP – SP], O}	Action
A	510	495	510 - 495 = 15 → 15	Lapse
B	510	500	510 - 500 = 10 → 10	Lapse
C	510	505	510 - 505 = 5 → 5	Lapse
D	510	510	510- 510 = 0 → 0	Lapse
E	510	515	510- 515 = (-) 5 → 0	Exercise
F	510	520	510 -520 = (-) 10→ 0	Exercise
G	510	525	510 -525 = (-) 15-→ 0	Exercise

6. (a) You are given the middle rates as under:

₹ 80/£ 1 in London,

₹ 47/US $ in Delhi, and

US $ 1.58/£ 1 in New York.

Compute the Arbitrage gain on ₹ 8,00,000.

(b) ADS Ltd. is considering a project in US, which will involve an initial investment of US $ 1,10,00,000. The project will have 5 years of life. Current spot exchange rate is ₹48 per US $.The risk free rate in US is 8% and the same in India is 12%. Cash inflows from the project are as follows-

Years	1	2	3	4	5
Cash Inflow (US $)	20,00,000	25,00,000	30,00,000	40,00,000	50,00,000

Calculate the NPV of the project using foreign currency approach. Required rate of return on this project is 14%. [6+10]

Answer:

6. (a) The following sequential will serve the purpose:

(i) Buy US $ in Delhi and get 17,021.277 US $ for ₹ 8L

(ii) Sell the above US $ in N.Y for £ and get (£ 17,021.277 ÷ 1.58) = £ 10,772.96

(iii) Sell the £ obtained in (ii) for INR in London

£ 10,772.96 × 80 = ₹ 8,61,836.80

Arbitrage gain will be ₹ (8,61,836.80 – 8,00,000)

= ₹ 61,836.80

(b) **Note:** It is assumed that the required rate of return of 14% (Risk Adjusted Rate) is for rupee inflows.

1 + Risk Adjusted Rate = (1 + Risk Free Rate) x (1 + Risk Premium for the project)

1+14% = (1 +12%) x (1+ Risk Premium)

3.14 = 1.12 (1+ Risk Premium)

(1+ Risk Premium) = 1.14/1.12 = 1.01786

Risk Premium = 0.01786 or 1.786%

Therefore, Risk Adjusted Discount Rate for Dollar Flows is

(1+ Risk Adjusted Discount Rate) = (1 + USD Risk Free Rate) x (1 + Project Risk Premium)

= (1+8%) x(1+ 1.786%)

= 1.08 x 1.01786 = 1.09929

Risk Adjusted Discount Rate = 1.09929 -1 = 0.09929 or 9.93%.

Computation of Net Present Value (USD in Lakhs)

Particulars	Year	PV Factor @9.93%	Cash Flow	Disc.Cash Flow
Annual Cash Inflow	1	1/1.0993 = 0.910	20.00	18.20
	2	$1/1.0993^2$ = 0.827	25.00	20.68
	3	$1/1.0993^3$ = 0.753	30.00	22.59

	4	$1/1.0993^4 = 0.685$	40.00	27.40
	5	$1/1.0993^5 = 0.623$	50.00	31.15
Present Value of cash Inflows				120.02
Less: Initial Investment				(110.00)
Net Present Value (in USD Lakhs)				10.02
NPV in ₹ lakhs [USD 10.02 x spot rate 48.00 per USD]				480.96

7. (a) ABC Limited has decided to go in for a new model of Mercedes Car. The cost of the vehicle is 40 lakhs. The company has two alternatives: (i) taking the car on finance lease or (ii) borrowing and purchasing the car.

BMN Limited is willing to provide the car on finance lease to ABC Limited for five years at an annual rental of ₹ 8.75 lakhs, payable at the end of the year.

The vehicle is expected to have useful life of 5 years, and it will fetch a net salvage value of 10 lakhs at the end of year five. The depreciation rate for tax purpose is 40% on written-down value basis. The applicable tax rate for the company is 35%. The applicable before tax borrowing rate for the company is 13.8462%.

What is the net advantage of leasing for ABC Limited?

The present value interest factor at different rates of discount are as under:

Rate of Discount	Y-1	Y-2	Y-3	Y-4	Y-5
0.138462	0.8784	0.7715	0.6777	0.5953	0.5229
0.09	0.9174	0.8417	0.7722	0.7084	0.6499

(b) The following two types of securities are available in the market for investment:

Security	Return (%)	Standard Deviation (%)
Gilt-edge Security	7	0
Equity	25	30

Using the above two securities, if you are planning to invest ₹ 1, 00,000 to construct a Portfolio with a standard deviation of 24%, what is the return of such portfolio? [10+6]

Answer:

7. (a) Calculation of NPV if car is acquired on Finance Lease

Year	Lease rentals	Tax shield gained on lease rental @ 35%	Tax shield lost on depreciation @ 35%	Net cash outflow	Discount factor @ 9%	P.V. of cash outflows
	(a)	(b)	(c)	(a)-(b)+(c)		
1	8,75,000	3,06,250	5,60,000	11,28,750	0.9174	10,35,515
2	8,75,000	3,06,250	3,36,000	9,04,750	0.8417	7,61,528
3	8,75,000	3,06,250	2,01,600	7,70,350	0.7722	5,94,864
4	8,75,000	3,06,250	1,20,960	6,89,710	0.7084	4,88,591
5	8,75,000	3,06,250	72,576	6,41,326	0.6499	4,16,798
5 Loss of salvage value				10,00,000	0.6499	6,49,900
Net Present Value of Cash Outflows						39,47,196

Calculation of Depreciation of WDV Basis

Year	1	2	3	4	5
WDV at the beginning of the year	40,00,000	24,00,000	14,40,000	8,64,000	5,18,400
Depreciation @ 40% WDV	16,00,000	9,60,000	5,76,000	3,45,600	2,07,360
WDV at the end of year	24,00,000	14,40,000	8,64,000	5,18,400	3,11,040
Tax shield on depreciation @ 35%	5,60,000	3,36,000	2,01,600	1,20,960	72,576

Net Benefit of Leasing = ₹40,00,000 – ₹39,47,196 = ₹52,804

Suggestion – Since the NPV of leasing is lower than the cost of purchase, it is suggested to acquire the car on finance lease basis.

(b) $\sigma p^2 = w_1^2\sigma_1^2+w_2^2\sigma_2^2+2w_1^2w_2^2\sigma_1\sigma_2P_{12}$

Since, standard deviation of Gilt-edged securities is 0 and its co-relation with the Equity is also 0, the formula will be reduced to $\sigma p^2 = w_2^2\sigma_2^2$ or

$\sigma p = w_2\sigma_2$ or $0.24 = 0.30w_2$ or $w_2 = 0.8$

$Rp = w_1R_1+w_2R_2 = 0.2X0.07+0.8X0.25 = 0.214$

Return in Rupees = 100000X0.214 = ₹ 21400

8. Answer any 4 questions out of 5 (4*4=16)

(a) Write short note on GDRs.

(b) Objectives of Commodity Futures.

(c) List four types of market risk.

(d) Key elements of well functioning Financial System.

(e) Role of Financial intermediaries in swap arrangements

Answer:

8. (a) GDRs are equity instruments issued abroad by authorized overseas corporate bodies against the shares/bonds of Indian companies held with nominated domestic custodian banks. An Indian company intending to issue GDRs will issue the corresponding number of shares to an overseas depository bank. GDRs are freely transferable outside India and dividend in respect of the share represented by the GDR is paid in Indian rupees only. They are listed and traded on a foreign stock exchange. GDRs are fungible, which means the holder of GDRs can instruct the depository to convert them into underlying shares and sell them in the domestic market. GDRs re traded on Over the Counter (OTC) basis. Most of the Indian companies have their GDR issues listed on the Luxembourg Stock Exchange and the London Stock Exchange. Indian GDRs are primarily sold to institutional investors and the major demand is in the UK, US, Hongkong, Singapore, France and Switzerland. There is no such difference between ADR and GDR from legal point of view.

(b) Objectives of Commodity Futures:

- Hedging with the objective of transferring risk related to the possession of physical assets through any adverse moments in price. Liquidity and Price discovery to ensure base minimum volume in trading of a through market information and demand supply factors that facilitates a regular and authentic price discovery mechanism.
- Maintaining buffer stock and better allocation of resources as it augments reduction in inventory requirement and thus the exposure to risks related with price fluctuation declines. Resources can thus be diversified for investments.

- Price stabilization along with balancing demand and supply position. Futures trading leads to predictability in assessing the domestic prices, which maintains stability, thus safeguarding against any short term adverse price movements. Liquidity in Contracts of the commodities traded also ensures in maintaining the equilibrium between demand and supply.
- Flexibility, certainty and transparency in purchasing commodities facilitate bank financing.

Predictability in prices of commodity would lead to stability, which in turn would eliminate the risks associated with running the business of trading commodities. This would make funding easier and less stringent for banks to commodity market players.

(c) Market risk is the risk of losses in positions arising from movements in market prices. Some market risks include:

- Equity risk, the risk that stock prices or stock indices values and/or their implied volatility may change.
- Interest rate risk, the risk that interest rates (e.g. Libor, Euribor, etc.) may fluctuate.
- Currency risk, the risk of fluctuations in foreign exchange rates (e.g. EUR/USD, EUR/GBP, etc.).
- Commodity risk, the risk that commodity prices (e.g. corn, copper, crude oil, etc.) may change adversely.

(d) Key elements of a well-functioning Financial System

The basic elements of a well-functional financial system are:

(i) a strong legal and regulatory environment;
(ii) stable money;
(iii) sound public finances and public debt management;
(iv) a central bank;
(v) a sound banking system;
(vi) an information system; and
(vii) well functioning securities market.

(e) Role of Financial intermediaries in swap arrangements.

1. **Swap arrangements:** Non-financial Companies do not get in touch directly to arrange a swap. They each deal with a financial intermediary such a Bank or other Financial Institution.
2. **Contracts:** The Financial Institution has two separate contracts, one with either party. Generally, the parties to the Swap arrangement will not know that the Financial Institution has entered into an offsetting swap with the other beneficiary.
3. **Risk of Default:** If one of the beneficiary Company defaults, the Financial Institution still has to honour its agreement with the other Company.
4. **Compensation:** Swaps are structured to ensure that the financial institution earns around 5% on a pair of offsetting transactions. The margin of 5 basis points is partly to compensate the Financial Institution for the risk that one of the two beneficiaries will default on the swap payments.