

GUIDELINE ANSWERS FOR MAY 2011 CA FINAL EXAMINATIONS

STRATEGIC FINANCIAL MANAGEMENT

Question 1(a) – Portfolio Returns – Arbitrage Pricing Theory

5 Marks

Mr. Tamarind intends to invest in equity shares of a company the value of which depends upon various parameters as mentioned below –

Factor	Beta	Expected value in %	Actual Value in %
GNP	1.20	7.70	7.70
Inflation	1.75	5.50	7.00
Interest rate	1.30	7.75	9.00
Stock market index	1.70	10.00	12.00
Industrial production	1.00	7.00	7.50

If the risk free rate of interest be 9.25%, how much is the return of the share under Arbitrage Pricing Theory?

Solution:

Note: Expected Return under Arbitrage Pricing Theory = $R_F + \beta_A (R_A - R_F) + \beta_B (R_B - R_F) + \beta_C (R_C - R_F) + \dots$

Where, R_F = Risk Free Return; $\beta_A, \beta_B, \beta_C$ = Beta of Factors; $(R_A - R_F)$ = Risk Premium of Factor A; $(R_B - R_F)$ = Risk Premium of Factor B etc.

Computation of Return of Share under Arbitrage Pricing Theory:

Factor	Expected Return of Factors	Risk Premium $R_A - R_F$	Beta	Beta × Risk Premium
GNP	7.70	$7.70 - 9.25 = (1.55)$	1.20	(1.86)
Inflation	5.50	$5.50 - 9.25 = (3.75)$	1.75	(6.56)
Interest rate	7.75	$7.75 - 9.25 = (1.50)$	1.30	(1.95)
Stock Market Index	10.00	$10.00 - 9.25 = 0.75$	1.70	1.28
Industrial Production	7.00	$7.00 - 9.25 = (2.25)$	1.00	(2.25)
Total Risk Premium				(11.37)

Expected Return from Portfolio = Risk Free Return + Total Risk Premium = $9.25\% - 11.37\% = 2.12\%$

Question 1(b) – Option Valuation – Risk Neutral Model

5 Marks

The current market price of an equity share of Penchant Ltd is ₹ 420. Within a period of 3 months, the maximum and minimum price of it is expected to be ₹ 500 and ₹ 400 respectively. If the risk free rate of interest be 8% p.a., what should be the value of a “3 month's” CALL option under the ‘Risk neutral method at the strike rate of ₹ 450? Given $e^{0.02} = 1.0202$

Solution:

Current Spot Price (SP_0) = ₹ 420; Exercise Price = ₹ 450

Future Spot Price 1 (FP_1)	₹ 500	Future Spot Price 2 (FP_2)	₹ 400
% Change (R_1)	$(500 - 420) / 420 = 19.05\%$	% Change (R_2)	$(400 - 420) / 420 = (4.76\%)$
Position	In the Money	Position	Out of Money
Action	Exercise	Action	Lapse
Value on Expiry (V_{C1})	$FP_1 - EP = 500 - 450 = ₹ 50$	Value on Expiry (V_{C2})	₹ NIL
Probability of FP_1 [P_1]	x	Probability of FP_2 [P_2]	$1 - x$

Probability Values

Return over the Option Period under Risk Free Return = $e^{rt} - 1 = e^{0.08 \times 0.25} - 1 = 1.0202 - 1 = 0.0202$ or 2.02%

Risk Free Return = $x \times \% \text{ Change for } FP_1 + [(1 - x) \times \% \text{ Change for } FP_2]$

$$\begin{aligned} \Rightarrow 2.02 &= [x \times 19.05] + [(1 - x) \times (-4.76\%)] \\ \Rightarrow 2.02 &= 19.05x + [-4.76 + 4.76x] \\ \Rightarrow 2.02 &= 19.05x - 4.76 + 4.76x \\ \Rightarrow 2.02 + 4.76 &= 23.81x \\ \Rightarrow P_1 = x &= 6.78 \div 23.81 = 0.2848 \text{ or } 28.48\% \\ \Rightarrow P_2 = 1 - x &= 1 - 0.2848 = 0.7152 \text{ or } 71.52\% \end{aligned}$$

Value of Call on Expiry [Future Value]	$\Rightarrow (VC_1 \times P_1) + (VC_2 \times P_2)$ $\Rightarrow (50 \times 0.2848) + (0 \times 0.7152) \Rightarrow ₹ 14.24$
Present Value of Call [C]	Value of Call $\div e^{rt}$ $\Rightarrow ₹ 14.24 \div 1.0202$ $\Rightarrow ₹ 13.96$

Question 1(c) – Portfolio Hedging using Index Futures**5 Marks**

A Mutual Fund is holding the following assets in ₹ Crore:

Investments in diversified equity shares	90.00	
Cash and Bank Balances	10.00	100.00

The Beta of the portfolio is 1.1. The index future is selling at 4300 level. The Fund Manager apprehends that the index will fall at the most by 10%. How many index futures he should short for perfect hedging so that the portfolio beta is reduced to 1.00? One index future consists of 50 units.

Substantiate your answer assuming the Fund Manager's apprehension will materialize.

Solution:(a) **Object:** Reduce Beta Value of the Portfolio(b) **Activity:** Sell Index Futures

- Beta of Existing Portfolio $= \beta_1 = 1.10$
- Desired Beta of the New Portfolio $= \beta_N = 1$
- 3–Months' Future Value per unit of NIFTY $= 4300 \text{ Points}$
- Contract Size $= 50 \text{ Units}$
- Value per Futures Contract in NIFTY $= V_F = 4300 \times 50 = ₹ 2.15 \text{ Lakhs}$
- Value of the Portfolio $= V_P = ₹ 10 \text{ Crores}$

- No. of Futures Contract to be sold:

$$= \text{Portfolio Value} \times \frac{[\text{Beta of the Portfolio} - \text{Desired Value of Beta}]}{\text{Value of a Futures Contract}}$$

$$= V_P \times \frac{\beta_1 - \beta_N}{V_F} = ₹ 1000 \text{ Lakhs} \times [(1.10 - 1.00) \div ₹ 2.15 \text{ Lakhs}]$$

$$= 46.51 \text{ or } 47 \text{ Index Futures Contracts to be sold}$$

Effect without Selling Index Futures

Particulars	Index	Mutual Fund
Beta Value	1	1.10
Value at T_0 [Now]	4300	₹ 10.00 Crores
Fall in Value over the next 3–Months at 10% for NIFTY [Assumed] = Loss	430 [4300 $\times$ 10%]	₹ 1.10 Crores [₹ 10 Crores $\times$ 10% $\times$ Beta of 1.10]
Value at T_3 [3 Months later]	3870	₹ 8.90 Crores
Extent of Fall in %	10%	11%

If Beta of Mutual Fund had been at the desired level of 1, extent of fall in % would have been the same as that of NIFTY i.e. 10%.

Therefore, value of the portfolio would have been ₹ 9.00 Crores.

Hedging by Selling Index Futures

By selling 47 Contracts of NIFTY Futures at 4300, the gain would be equal to the difference between actual value and desired value i.e.

Particulars	Amount (₹)
Actual value	8.90 Crores
Less: Desired value	9.00 Crores
Fall Offset by Gain in Index Futures	0.10 Crores or 10 Lakhs

Particulars	NIFTY
No. of Contracts Sold	47
If value of NIFTY had fallen by 10% to 3870 points, the fund manager would still be able to sell the NIFTY Futures at 4300 points, thereby taking a gain of ₹ 430 per unit. Therefore, gain per Nifty Future Contract = ₹ 430 × 50 =	₹ 21,500
Gain on entering into 47 Nifty Futures Sale Contract [No. of Contracts 47 × ₹ 21,500]	₹ 10.11 Lakhs

Question 1(d) – Portfolio Risk and Return

5 Marks

Mr. Tempest has the following portfolio of four shares:

Name	Beta	Investment ₹ Lakhs
Oxy Rin Ltd	0.45	0.800
Boxed Ltd	0.35	1.500
Square Ltd	1.15	2.251
Ellipse Ltd	1.85	4.500

The risk free rate of return is 7% and the market rate of return is 14%. Required –

- Determine the portfolio Return.
- Calculate the portfolio Beta.

Solution:**Determination of Portfolio under CAPM**

$$E(R_p) = 7\% + 1.304 (14\% - 7\%) = 7\% + 1.304 \times 7\% = \mathbf{16.13\%}$$

Determination of Portfolio Beta

Name	Beta of division	Investment	Weighted Beta
Oxy Rin Ltd	0.45	0.80	0.360
Boxed Ltd	0.35	1.50	0.525
Square Ltd	1.15	2.25	2.588
Ellipse Ltd	1.85	4.50	8.325
		9.05	11.798

Therefore, Portfolio Beta = Weighted Average Beta = $11.798 \div 9.05 = 1.304$

Question 2(a) – Capital Budgeting – Evaluation of Leasing vs. Investing

8 Marks

X Ltd had only one water pollution control machine in this type of block of asset, with no book value under the provisions of the Income Tax Act, 1961 as it was subject to rate of depreciation of 100% in the very first year of installation.

Due to funds crunch, X Ltd decided to sell the machine which can be sold in the market to anyone for ₹ 5,00,000 easily.

Understanding this from a reliable source, Y Ltd came forward to buy the machine for ₹ 5,00,000 and lease it to X Ltd for lease rental of ₹ 90,000 p.a. for 5 years. X Ltd decided to invest the net sale proceed in a risk free deposit, fetching yearly interest of 8.75% to generate some cash flow. It also decided to relook the entire issue after the said period of 5 years.

Another company. Z Ltd also approached X Ltd proposing to sell a similar machine for ₹ 4,00,000 to the latter and undertook to buy it back at the end of 5 years for ₹ 1,00,000 provided the maintenance were entrusted to Z Ltd for yearly charge of ₹ 15,000. X Ltd would utilize the net sale proceeds of the old machine to fund this machine also should it accept this offer.

The marginal rate of tax of X Ltd is 34% and its weighted average cost of capital is 12%.

Which Alternative would you recommend? Discounting Factors @ 12% for Years 1 to 5 are 0.893, 0.797, 0.712, 0.636, 0.567.

Solution:

Option I	Option II
Sell the Asset to Y Ltd, Invest the Proceeds in Risk Free Deposit, and take the asset back on Lease.	Sell the Asset in the Open Market. Purchase a New Asset from Z Ltd.

Option I

Nature	Cash Flow	Cash Flow	Years	DF @ 12 %	DCF
1. Sale of Machine: Proceeds (Inflow)	5,00,000				
Less: Taxes	(1,70,000)				
Net Cash Flow		3,30,000	0	1.000	3,30,000
2. Investment in Risk Free Deposit (Outflow)		(3,30,000)	0	1.000	(3,30,000)
3. Interest from Risk Free Deposit [3,30,000 × 8.75%]	28,875				
Less: Taxes (28,875 × 34%)	(9,818)	19,057	1 – 5	3.605	68,700
4. Lease Rentals (Outflow)	90,000				
Less: Taxes (90,000 × 34%)	(30,600)	(59,400)	1 – 5	3.605	(2,14,137)
5. Maturity Proceeds of Deposit (Inflow)		3,30,000	5	0.567	1,87,110
Net Present Benefit					41,673

Note:

- (a) **Taxes on Sale of Machine:** Since the machine is fully written off under income tax law, entire sale proceeds will be treated as income, and subjected to tax. Therefore, Capital Gains Tax on the same = ₹ 5,00,000 × 34% = ₹ 1,70,000.
- (b) **Investment in Risk Free Deposits:** Only the net proceeds available after the sale is invested in the deposits. Therefore, only ₹ 3,30,000 is considered as investment in Risk Free Deposits.
- (c) **Interest on Risk Free Deposits:** Interest Cash Flows are assumed to be reinvested by X Ltd at the rate of 12%. Alternatively, it may be assumed that the interest on Risk Free Deposits are reinvested in the same deposits.

Option II

Nature	Cash Flow	Cash Flow	Years	DF @ 12 %	DCF
1. Sale of Machine: Proceeds (Inflow)	5,00,000				
Less: Taxes	(1,70,000)				
Net Cash Flow		3,30,000	0	1.000	3,30,000
2. Investment in New Machine (Outflow)		(4,00,000)	0	1.000	(4,00,000)
3. Tax Savings on Depreciation:					
Depreciation (400000 – 100000) ÷ 5 Years	60,000				
Tax Savings [60,000 × 34%] (Inflow)		20,400	1 – 5	3.605	73,542
4. Maintenance Cost (Outflow)	15,000				
Less: Taxes (15,000 × 34%)	(5,100)	(9,900)	1 – 5	3.605	(35,690)
5. Sale Proceeds (Inflow)		1,00,000	5	0.567	56,700
Net Present Benefit					24,552

Conclusion: Net Present Benefit under Option I is higher, and hence, the Company should opt for selling the machinery to Y Ltd, and take the same on a lease.

Question 2(b) – Derivatives – Foreign Currency Swap**8 Marks**

A Inc. and B Inc. intend to borrow \$200,000 and \$200,000 in ₹ Respectively for a time horizon of one year. The prevalent interest rates are as follows:

Company	₹ Loan	\$ Loan
A Inc	5%	9%
B Inc	8%	10%

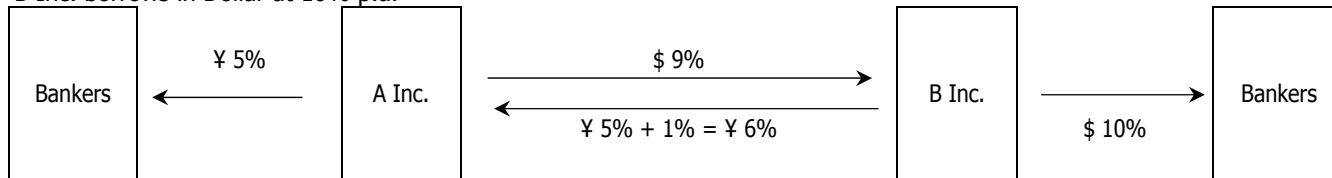
The prevalent exchange rate is \$ 1 = ₹ 120.

They entered in a currency swap under which it is agreed that B Inc will pay A Inc @ 1% over the ₹ Loan interest rate which the later will have to pay as a result of the agrees currency swap whereas A Inc will reimburse interest to B Inc only to the extent of 9%. Keeping the exchange rate invariant, quantify the opportunity gain or loss component of the ultimate outcome, resulting from the designed currency swap.

Solution:**1. Computation of Effective Interest Rate**

A Inc. borrows in Yen at 5% interest p.a.

B Inc. borrows in Dollar at 10% p.a.



Effective Interest Rate under Swap Arrangements (Ignoring Exchange Rate Changes)

	Pay to Bankers	Pay to Other Party	Receive from Other Party	Net Cost
A Inc.	5% ¥	9% \$	6% ¥	8% \$
B Inc.	10% \$	6% ¥	9% \$	7% ¥

2. Computation of Gain:

Without Swap Arrangements: A Inc. will pay 9% for US Dollar Loan. B Inc. will pay 8% Yen Loan. Therefore, Opportunity Gain due to swap =

A Inc. = Rate without Swap 9% **Less** Swap Adjusted Effective Rate 8% = 1% on US Dollar LoanB Inc. = Rate without Swap 8% **Less** Swap Adjusted Effective Rate 7% = 1% on Yen Loan**Gain in Monetary Terms:**

A Inc. = USD 2,00,000 × 1% = USD 2,000

B Inc. = USD 2,00,000 × Yen 120 × 1% = Yen 2,40,000

Question 3(a) – Mergers and Acquisitions – Swap Ratio and Value Per Share

8 Marks

Abhiman Ltd is a subsidiary of Janam Ltd and is acquiring Swabhimman Ltd which is also a subsidiary of Janam Ltd. The following information is given –

Particulars	Abhiman Ltd	Swabhimman Ltd
% Shareholding of promoter	50%	60%
Share Capital	₹ 200 lacs	100 lacs
Free Reserves and surplus	₹ 900 lacs	600 lacs
Paid up value per share	₹ 100	10
Free float market capitalization	₹ 500 lacs	156 lacs
P/E Ratio (times)	10	4

Janam Ltd is interested in doing justice to both companies. The following parameters have been assigned by the Board of Janam Ltd for determining the swap ratio –

Book value	25%
Earning per share	50%
Market price	25%

You are required to compute

- The swap ratio.
- The book value, earning per share and expected market price of Swabhimman Ltd., (assuming P/E Ratio of Abhiman ratio remain the same and all assets and liabilities of Swabhimman Ltd are taken over at book value)

Solution:**1. Computation of Book Value Per Share**

Particulars	Abhiman Ltd	Swabhimman Ltd
Share Capital (₹ Lakhs)	200	100
Free Reserves	900	600
Total Book Value of Equity	₹ 1100 Lakhs	₹ 700 Lakhs
No of Shares	2 Lakhs	10 Lakhs
Book Value Per Share	₹ 550	₹ 70

2. Market Price Per Share

Particulars	Abhiman Ltd	Swabhimman Ltd
Free Float Market Capitalisation (Value of Non–Promoters Holdings)	₹ 500 Lakhs	₹ 156 Lakhs
Promoter's Holding	50%	60%
Total Market Capitalisation (FFMC ÷ Non Promoters holding)	₹ 1000 Lakhs	₹ 390 Lakhs
No of Shares	2 Lakhs	10 Lakhs
Market Price	₹ 500	₹ 39
Price Earnings Ratio	10	4
Therefore, EPS (Market Price ÷ PE Ratio)	50	9.75

3. Computation of Swap Ratio

Swap Ratio = Value Per Share of Selling Company (Swabhimman) ÷ Value Per Share of Buying Company (Abhiman)

Basis	Swap Ratio	Weight	W × SR
Book Value	₹ 70 ÷ ₹ 550 = 0.1273	0.25	0.0318
Earnings Per Share	₹ 9.75 ÷ ₹ 50 = 0.1950	0.50	0.0975
Market Price	₹ 39 ÷ ₹ 500 = 0.0780	0.25	0.0195
			0.1488 or 0.15

Weighted Average Swap Ratio = 0.15 Shares of Abhiman Ltd to be issued for every Share of Swabhimman Ltd

Therefore, no of Shares to be issued = Shares Outstanding in Swabhimman Ltd × Swap Ratio
= 10 Lakhs × 0.15 = 1.50 Lakhs Shares

Question 3(b) – Capital Budgeting – Choice of Projects

8 Marks

Jumble Consultancy Group has determined relative utilities of cash flows of two forthcoming projects of its client company as follows:

Cash Flow in ₹	–15000	–10000	–4000	0	15000	10000	5000	1000
Utilities	–100	–60	–3	0	40	30	20	10

The distribution of cash flows of project A and Project B are as follows:

Project A	Cash Flow (₹)	–15000	–10000	15000	10000	5000
	Probability	0.10	0.20	0.40	0.20	0.10
Project B	Cash Flow (₹)	–10000	–4000	15000	5000	10000
	Probability	0.10	0.15	0.40	0.25	0.10

Which Project should be selected and why?

Solution:

Computation of Expected Cash Flow

Project A					Project B				
Cash Flow	Probability	Expected CF	Utility	Expected Utility	Cash Flow	Probability	Expected CF	Utility	Expected Utility
(15,000)	0.10	(1,500)	(100)	(10)	(10,000)	0.10	(1,000)	(60)	(6)
(10,000)	0.20	(2,000)	(60)	(12)	(4,000)	0.15	(600)	(3)	(0.45)
15,000	0.40	6,000	40	16	15,000	0.40	6,000	40	16
10,000	0.20	2,000	30	6	5,000	0.25	1,250	20	5
5,000	0.10	500	20	2	10,000	0.10	1,000	30	3
Expected Cash Flow		5,000		2			6,650		17.55

Conclusion: Project B must be selected, since it has a higher expected cash flow, and also a higher utility value.

Question 4(a) – Security Analysis

3 + 3 + 2 = 8 Marks

Shares of Voyage Ltd are being quoted at a price earning ratio of 8 times. The company retains 45% of its earnings which are ₹ 5 per share. You are required to compute

- The cost of equity to the company if the market expects a growth rate of 15% pa.
- If the anticipated growth rate is 16% per annum, Calculate the indicative market price with the same cost of capital.
- If the company's cost of capital is 20% pa and the anticipated growth rate is 19% pa., calculate the market price per share.

Solution:**1. Computation of Cost of Equity**

- (a) Market Price Per Share = EPS × PE Ratio = ₹ 5 × 8 = ₹ 40
 (b) Last Dividend Per Share (D_0) = EPS × Payout Ratio = ₹ 5 × 55% = ₹ 2.75
 (c) Next Expected Dividend (D_1) = $D_0 + \text{Growth Rate}$ = ₹ 2.75 + 15% = ₹ 3.1625
 (d) Cost of Equity (Under Dividend Growth Model) = $D_1/P_0 + G$ = $[3.1625 \div ₹ 40] + 15\%$ (In absolute terms) = 7.91 + 15 = 22.91%

2. Market Price (With G = 16%, Ke = 22.91%)

- (a) Next Year's Dividend (D_1) = $D_0 + G$ = ₹ 2.75 + 16% = ₹ 3.19
 (b) Market Price (P_0) = $D_1 \div (Ke - G)$ = ₹ 3.19 ÷ (22.91% - 16%) = ₹ 3.19 ÷ 6.91% = ₹ 46.16

3. Market Price (With G = 19%, Ke = 20%)

- (a) Next Year's Dividend (D_1) = $D_0 + G$ = ₹ 2.75 + 19% = ₹ 3.2725
 (b) Market Price (P_0) = $D_1 \div (Ke - G)$ = ₹ 3.2725 ÷ (20% - 19%) = ₹ 3.2725 ÷ 1% = ₹ 327.25

Question 4(b) – Mutual Fund – Net Asset Value

8 Marks

An investor purchase 300 units of a Mutual Fund at ₹ 12.25 per unit on 31.12.2009. As on 31.12.2010 he has received ₹ 1.25 as dividend and ₹ 1.00 as capital gains distribution per unit.

Required:

- (i) The return on the investment if the NAV as on 31st December, 2010 is ₹ 13.00
 (ii) The return on the investment as on 31st December, 2010 if all dividends and capital gains distributions are reinvested into additional units of the fund at ₹ 12.50 per unit.

Solution:**1. Return on Investment (Closing NAV ₹ 13 per unit)**

$$\begin{aligned} \text{Return} &= \frac{\text{Dividends} + \text{Capital Gain Distribution} + \text{Capital Appreciation}}{\text{Opening NAV}} \\ &= \frac{\text{Rs.1.25} + \text{Rs.1.00} + (\text{Rs.13.00} - \text{Rs.12.25})}{\text{Rs.12.25}} = \frac{\text{Rs.3.00}}{\text{Rs.12.25}} = 24.49\% \end{aligned}$$

2. Return on Investment (Reinvestment into Additional Units)

- Cash Returns Per Unit = Dividends ₹ 1.25 + Capital Gain Distribution ₹ 1.00 = ₹ 2.25 per unit
- Therefore, Total Returns on 300 Units = 300 Units × ₹ 2.25 per unit = ₹ 675
- Reinvestment Price Per Unit = Closing NAV = ₹ 12.50
- Number of Additional Units = Total ₹ 675 ÷ ₹ 12.50 = 54 Units
- Total Units at the Year End = Opening 300 Units + Additional 54 = 354 Units

$$\begin{aligned} \text{Return} &= \frac{\text{Total Closing NAV Less Total Opening NAV}}{\text{Total Opening NAV}} = \frac{354 \text{ Units} \times \text{Rs.13 Less } 300 \text{ Units} \times \text{Rs.12.25}}{300 \text{ Units} \times \text{Rs.12.25}} \\ &= \frac{\text{Rs.4,602 Less Rs.3,675}}{\text{Rs.3,675}} = ₹ 927 \div ₹ 3,675 = 25.22\% \end{aligned}$$

Question 5(a) – Mergers and Acquisitions – Valuation of Debt and Valuation of Equity

8 Marks

Simple Ltd and Dimple Ltd are planning to merge. The total value of the companies are dependent on the fluctuating business conditions. The following information is given for the total value (Debt + Equity) structure of each of the two companies.

Business Condition	Probability	Simple Ltd ₹ Lacs	Dimple Ltd ₹ Lacs
High Growth	0.20	820	1050
Medium Growth	0.60	550	825
Slow Growth	0.20	410	590

The current debt of Dimple Ltd is ₹ 65 Lakhs and of Simple Ltd is ₹ 460 Lakhs. Calculate the expected value of debt and equity separately for the merged entity.

Solution:**1. Computed of Weighted Average Total Value**

Business Condition	Probability	Simple Ltd	Dimple Ltd	Total Value	Weighted Average
High Growth	0.20	820	1050	1,870	374
Medium Growth	0.60	550	825	1,375	825
Slow Growth	0.20	410	590	1,000	200
					1,399

2. Computation of Value of Debt and Equity After Merger

Total Value ₹ 1,399 Lakhs		
Value of Debt ₹ 525 Lakhs (₹ 65 Lakhs + ₹ 460 Lakhs)		Value of Equity (Balancing Figure) ₹ 874 Lakhs

Question 5(b) – Mergers and Acquisitions – Economic Value Added

8 Marks

Tender Ltd has earned a net profit of ₹ 15 Lakhs after tax at 30%. Interest cost charged by financial institutions was ₹ 10 Lakhs. The invested capital is ₹ 95 Lakhs of which 55% is debt. The company maintains a weighted average cost of capital of 13%.

Required –

- Compute the operating income.
- Compute the Economic Value Added (EVA).
- Tender Ltd has 6 Lakhs Equity Shares outstanding. How much dividend can the company pay before the value of the entity starts declining?

Solution:**1. Computation of Operating Income**

Particulars	₹ Lakhs
Profit After Tax	15.00
Add: Taxes [Profit After Tax × Tax Rate / (1 – Tax Rate)]	6.43
Profit Before Taxes	21.43
Add: Interest	10.00
Profit Before Interest and Taxes = Operating Income	31.43

2. Computation of EVA:

Economic Value Added = Operating Income After Taxes **Less** Capital Charge
 = EBIT × (1 – Tax Rate) **Less** Capital Employed × WACC
 = ₹ 31.43 Lakhs × 70% **Less** ₹ 95 Lakhs × 13%
 = ₹ 22 Lakhs **Less** ₹ 12.35 Lakhs = **₹ 9.65 Lakhs**

3. Maximum Dividend Payable

The company may pay a maximum dividend upto the Economic Value Added, beyond which value of the entity will decline. Therefore, maximum dividend payable = EVA ÷ No. of Shares = ₹ 9.65 Lakhs ÷ 6 Lakhs Shares = ₹ 1.608 per Share

Question 6(a) – Share Valuation – Dividend Policies

8 Marks

The following information is given for QB Ltd.

Earning per share	₹ 12
Dividend per share	₹ 3
Cost of capital	18%
Internal Rate of Return on investment	22%
Retention ratio	40%

Calculate the market price per share using – (i) Gordons formula; (ii) Walter's Model.

Solution:**1. Value Per Share under Walter's Model**

$$\begin{aligned} \text{Value per Share (P}_0\text{)} &= \frac{D}{K_e} + \frac{(E - D) \frac{r}{K_e}}{K_e} = \frac{\text{Rs.} 3}{0.18} + \frac{(12 - 3) \frac{0.22}{0.18}}{0.18} \\ &= ₹ 16.67 + ₹ 61.11 = ₹ 77.78 \end{aligned}$$

2. Value Per Share under Gordon's Model

Note: Retention Ratio as given in the Question is 40%. However, based on EPS and DPS given, retention ratio is 75%. Therefore, solutions have been provided on three alternatives –

- (a) Assuming 40% Retention Ratio
- (b) Assuming 75% Retention Ratio
- (c) Assuming 40% Retention Ratio in the future, whereas 75% retention ratio for the last declared dividend

Alternative One

$$\text{Value per Share (P}_0\text{)} = \frac{D_1}{K_e - g}$$

G = Growth Rate = Retention Ratio × Reinvestment Rate = 40% × 22% = 8.8%

Here, since there is no change in retention ratio, $D_1 = D_0 \times (1+g) = ₹ 3 \times 1.088 = ₹ 3.264$

$$\frac{D_1}{K_e - g} = \frac{3.264}{0.18 - 0.088} = \frac{3.264}{0.092} = ₹ 35.48$$

Alternative Two

$$\text{Value per Share (P}_0\text{)} = \frac{D_1}{K_e - g}$$

G = Growth Rate = Retention Ratio × Reinvestment Rate = 75% × 22% = 16.50%

Here, since there is no change in retention ratio, $D_1 = D_0 \times (1+g) = ₹ 3 \times 1.165 = ₹ 3.495$

$$\frac{D_1}{K_e - g} = \frac{3.495}{0.18 - 0.165} = \frac{3.495}{0.015} = ₹ 233.00$$

Alternative Three

Note: Retention Ratio at T_0 will affect the earnings of T_1 . Therefore, based on Retention Ratio at T_0 , EPS_1 will be determined. On EPS_1 , future retention / payout rate will be applied to obtain D_1 . Based on Future Retention Ratio, new growth rate, applicable to D_1 will be applied.

Stage 1: Determination of Earnings at T_1

$EPS_1 = EPS_0 \times (1 + \text{Growth Rate for Year 1})$

Growth Rate for Year 1 = Retention Ratio at $T_0 \times \text{Reinvestment Rate} = 75\% \times 22\% = 16.50\%$

Therefore, $EPS_1 = ₹ 12 \times 1.165 = ₹ 13.98$

Stage 2: Determination of Dividends at T_1

Dividend at $T_1 = EPS_1 \times \text{Payout Ratio} = ₹ 13.98 \times 60\% = ₹ 8.388$

Stage 3: Determination of Growth Rate for future dividends (i.e. Rate at which D_1 will grow to perpetuity)

Growth Rate (Year 1 to Perpetuity) = Retention Ratio × Reinvestment Rate = 40% × 22% = 8.8%

Stage 4: Determination of Value

$$\frac{D_1}{K_e - g} = \frac{8.388}{0.18 - 0.088} = \frac{8.388}{0.092} = ₹ 91.17$$

Question 6(b)(i) – Capital Market – Stock Exchange

4 Marks

Mention the functions of a stock exchange.

Solution:

Refer Q No.3 / Pg 4.2

Question 6(b)(ii) – Security Analysis – Economic Analysis

4 Marks

Mention the various techniques used in economic analysis.

Solution:

Refer Q No.2 / Pg 5.2

Question 7(a) – Foreign Currency Risk Management

4 Marks

Explain the significance of LIBOR in international financial transactions.

Solution:

1. **LIBOR:** LIBOR stands for Lond Interbank Offered Rate, is the rates at which various banks participate in the London Money Market for short term investments.

2. Significance:

- It is the most active interest rate market in the world. LIBOR Rates vary right throughout the day and is calculated for even short periods such as one day.
- London is also a major global financial centre, and hence is relevant for transactions in major foreign currencies such as US Dollars, Swiss Franc, Japanese Yen etc.
- Due to the extent of activity and also due to the importance of the London Money Market in international currency transactions, LIBOR is used in determining the price of many financial derivatives across the world. Examples of Derivatives dependent upon LIBOR: Swaps, Futures, Forward Rates etc.

Question 7(b) – Systematic Risk – Risks Affected by Government Policy**4 Marks**

Discuss how the risk associated with securities is effected by Government policy.

Solution:

Risks due to Government Policies will affect the entire economy as such, and therefore, are classified as Systematic Risk. Examples of areas in which Government Policies and the impact on the securities is as follows –

- Tax Policies:** Both direct and indirect tax policies will have an impact on the valuations. Favourable positions such as low tax rates will aid value appreciation.
- Incentives and Exim Policy:** Exports are generally supported with incentives by the Government. Withdrawal of the same can adversely affect earnings of export houses / entities.
- Industrial Policy of the Government:** If economic and industrial policies of the Government are Pro-Industry, reduced restrictions on its operations and compliance, permission for expansion into multiple business activities, FDI etc. will favourably impact the business entities. Restrictive economic and industrial policies will adversely impact.
- Change in Planned and Unplanned Expenditure:** Generally, increase in unplanned expenditure results in creation of new infrastructure and increasing the scale of economic activities. As a result, in general, revenue and operating income of various sectors will improve.

Question 7(c) – Foreign Currency Risk Management – Parity Theory**4 Marks**

Questions	Answer – Refer
(i) What is the meaning of Interest rate parity and	Pg 13.6
(ii) What is the meaning of Purchasing power parity?	Pg 13.7, Q 11

Question 7(d) – Derivatives – Significance of Underlying**4 Marks**

What is the significance of an underlying in relation to a derivative instrument?

Solution:**Refer Pg 10.1, Q 1****Question 7(e) – Capital Investing Decisions – Simulation Analysis****4 Marks**

What are the steps for simulation analysis?

Solution:

The Simulation procedure involve the following steps:

Step	Description of procedure
1	Define the problem or system intended to be simulated.
2	Formulate the model intended to be used.
3	Test the model and compare its behaviour with the behaviour of the actual problem environment.
4	Identify and collect the data needed to test the model.
5	Run the simulation.
6	Analyse the results of the simulation and, if desired, change the solution that is being evaluated.
7	Return the simulation to test the new solution.
8	Validate the simulation, i.e. increase the chances that any inferences that may be drawn about the real situation from running the simulation will be valid.