

SHREE GURU KRIPA'S INSTITUTE OF MANAGEMENT

Guideline Answers for November 2011 CA Final – Strategic Financial Management

Question 1(a) – Mutual Funds – Annualized Return

5 Marks

Orange purchased 200 units of Oxygen Mutual Fund at ₹ 45 per unit on 31st December, 2009. In 2010, he received ₹ 1.00 as dividend per unit and a capital gains distribution of ₹ 2 per unit.

Required:

- Calculate the return for the period of one year assuming that the NAV as on 31st December 2010 was ₹ 48 per unit.
- Calculate the return for the period one year assuming that the NAV as on 31st December 2010 was ₹ 48 per unit and all dividends and capital gains distributions have been reinvested at an average price of ₹ 46.00 per unit.

Ignore taxation.

Solution:

1. **Initial Investment:** 200 Units × ₹ 45 per Unit = ₹ 9,000

2. **Computation of Return and Annualized Rate (Cash Distribution Approach):**

Description		Amount
Cash Dividends Distributed	[200 Units × ₹ 1 per Unit]	200
Capital Gains Distribution	[200 Units × ₹ 2 per Unit]	400
Distributed Return		600
Capital Appreciation	[200 Units × (Closing NAV ₹ 48 Less Opening NAV ₹ 45)]	600
Total Returns		1,200
Therefore, Annualized Rate		13.33%

3. **Annualized Return under Dividend Reinvestment Plan:**

- Cash distributions will be replaced by additional unit issue based on NAV of ₹ 46. Therefore, additional units under Reinvestment Plan = Cash Distribution ₹ 600 ÷ NAV for Reinvestment ₹ 46 = 13.043 Units
- No. of Units at the end of the year = Opening Units 200 + Reinvestment 13.043 = 213.043
- Closing NAV for all the Units = 213.043 Units × Closing NAV ₹ 48 = ₹ 10,226
- Therefore, Total Return = Closing NAV ₹ 10,226 Less Opening NAV ₹ 9,000 = ₹ 1,226
- Therefore, Annualized Return = Total Return ₹ 1,226 ÷ Opening NAV ₹ 9,000 = 13.62%

Question 1(b) – Foreign Currency Risk Management – Cross Currency Quote

5 Marks

An importer is due to pay the exporter on 28th January 2010, Singapore Dollars of 25,00,000 under an irrevocable letter of credit. It directed the bank to pay the amount on the due date.

Due to go-slow and strike procedures adopted by its staff, the bank was not in a position to remit the due. The amount was actually remitted on 4th February 2010.

On the transaction, the bank wants to retain an exchange margin of 0.125 percent.

The following were the rates prevalent in the exchange market on the relevant dates:

	28 th January	4 th February
Rupee/US \$ 1	₹ 45.85/45.90	₹ 45.97
London Pound / Dollars	\$ 1.7840 / 1.7850	\$ 1.7765 / 1.7775
Pound	Sing \$ 3.1575 / 3.1590	Sing \$ 3.1380 / 3.1390

What is the effect on account of the delay in remittance? Calculate rate in multiples of 0.0001.

Solution:**1. Computation of Exchange Rates****Note:**

- (a) Since exchange rate between Rupee and Singapore Dollar is not directly available, the same should be determined under Cross Currency Route.
- (b) The evaluation is done from the perspective of the Importer, and therefore, he will buy Foreign Currency to settle his import obligations. Hence, Ask Rate is relevant

(c) Ask Rate on 28.01.2010:

$$\begin{aligned} \frac{\text{₹}}{\text{Sing.\$}} &= \frac{\text{₹}}{\text{USD}} \times \frac{\text{USD}}{\text{GBP}} \times \frac{\text{GBP}}{\text{Sing.\$}} \\ &= \frac{\text{INR}45.90}{\text{USD}1.00} \times \frac{\text{USD}1.7850}{\text{GBP}1.00} \times \frac{\text{GBP}1.000}{\text{SGD}3.1575} = \text{₹} 25.9482 \text{ per SGD} \end{aligned}$$

(d) Ask Rate on 04.02.2010:

$$\begin{aligned} \frac{\text{₹}}{\text{Sing.\$}} &= \frac{\text{₹}}{\text{USD}} \times \frac{\text{USD}}{\text{GBP}} \times \frac{\text{GBP}}{\text{Sing.\$}} \\ &= \frac{\text{INR}45.97}{\text{USD}1.00} \times \frac{\text{USD}1.7775}{\text{GBP}1.00} \times \frac{\text{GBP}1.000}{\text{SGD}3.1380} = \text{₹} 26.0394 \text{ per SGD} \end{aligned}$$

2. Computation of Loss on Delay

Loss to the Company due to Exchange Rate Loss

= Units of SGD Required × (Exchange Rate on 04.02.2010 **Less** Exchange Rate on 28.01.2010)

= SGD 25,00,000 × (26.0394 – 25.9482) = ₹ 2,28,000

Add: Additional Bank Charges (at 0.125%) = ₹ 285 (₹ 2,28,000 × 0.125%)

Total Loss to the Importer = ₹ 2,28,285

Question 1(c) – Valuation of Shares – Perpetual Growth Model**5 Marks**

A company has a book value per share of ₹ 137.80. Its return on equity is 15% and follows a policy of retaining 60 percent of its annual earnings. If the opportunity cost of capital is 18 percent, what is the price of its share? [adopt the perpetual growth model to arrive at your solution].

Solution:

Perpetual Growth Model refers to Gordon's Dividend Growth Model. (Note: It can refer to Walter's Model. Solution is given for both models)

Under Gordon's Model

1. **Earnings Per Share at T₁** = Capital Employed per Share at T₀ × Return on Investment
= ₹ 137.80 × 15% = ₹ 20.67

Note: Capital Employed Per Share = Net Asset Value per Share = Book Value Per Share

2. **Dividend Per Share at T₁** = EPS₁ × Payout Ratio = ₹ 20.67 × 40% = ₹ 8.27

Note: Pay-Out Ratio = 1 – Retention Ratio = 1 – 0.6 = 0.4 or 40%

3. **Growth Rate** = Return on Investment 15% × Retention Ratio 60% = 9%

4. **Value Per Share** = $\frac{D_1}{K_e - G} = \frac{\text{Rs.}8.27}{0.18 - 0.09} = \text{₹} 91.89$

Under Walter's Model

$$\begin{aligned} \text{Value Per Share} &= \frac{D}{K_e} + \frac{(E - D) \frac{r}{K_e}}{K_e} = \frac{8.268}{0.18} + \frac{(20.67 - 8.268) * \frac{0.15}{0.18}}{0.18} \\ &= \frac{\text{Rs.}8.268 + 10.335}{0.18} = \text{₹} 103.35/\text{Share} \end{aligned}$$

Question 1(d) – Derivatives – Forward Rates to Spot Rate Computation

5 Marks

The six months forward price of a security is ₹ 208.18. The rate of borrowing is 8 percent per annum payable at monthly rates. What will be the spot price?

Solution:

$$FR = SP_0 \times \left(1 + \frac{r}{m}\right)^{t \times m}$$

Where,

Factor	Notation	Value
Forward Rate	FR	₹ 208.18
Rate of Interest per annum	r	8%
Number of Compounding in a Year	m	12 [Since interest is compounded monthly]
Number of Years	t	0.50 [6/12 Months]
Spot Price of the Security	SP ₀	?

$$\begin{aligned} \text{Therefore, ₹ 208.18} &= SP_0 \times (1 + 8\%/12)^{0.5 \times 12} \\ \Rightarrow \text{₹ 208.18} &= SP_0 \times (1 + 0.67\%)^6 = SP_0 \times (1 + 0.0067)^6 = SP_0 \times 1.0067^6 \\ &= 1.0409 SP_0 \\ \Rightarrow SP_0 &= ₹ 208.18 \div 1.0409 = \text{₹ 200} \end{aligned}$$

Therefore, Spot Price of the Security is ₹ 200.

Question 2(a) – Business Valuation – Break Up Value Approach

8 Marks

Using the Chop-shop approach (or Break-up value approach), assign a value for Cranberry Ltd. whose stock is currently trading at a total market price of €4 million. For Cranberry Ltd, the accounting data set forth three business segments: consumer wholesale, retail and general centers. Data for the firm's three segments are as follows:

Business Segment	Segment Sales	Segment Assets	Segment Operating Income
Wholesale	€2,25,000	€6,00,000	€75,000
Retail	€7,20,000	€5,00,000	€1,50,000
General	€25,00,000	€40,00,000	€7,00,000

Industry data for “pure-play” firms have been compiled and are summarized as follows:

Business Segment	Capitalization / Sales	Capitalization / Assets	Capitalization / Operating Income
Wholesale	0.85	0.7	9
Retail	1.2	0.7	8
General	0.8	0.7	4

Solution:

1. Valuation under various Bases

Particulars	Wholesale	Retail	General	Total
(a) Segment Sale Based Valuation (Segment Sales × Capitalisation Rate)	1,91,250 (2,25,000 × 0.85)	8,64,000 (7,20,000 × 1.2)	20,00,000 (25,00,000 × 0.8)	30,55,250
(b) Segment Asset Based Valuation (Segment Assets × Capitalisation Rate)	4,20,000 (6,00,000 × 0.7)	3,50,000 (5,00,000 × 0.7)	28,00,000 (40,00,000 × 0.7)	35,70,000
(c) Segment Operating Income Based Valuation (Segment Income × Capitalisation Rate)	6,75,000 (75,000 × 9)	12,00,000 (1,50,000 × 8)	28,00,000 (7,00,000 × 4)	46,75,000

2. Average Capitalisation Based on Book Values of Factors

$$= (\text{€ } 30,55,250 + \text{€ } 35,70,000 + \text{€ } 46,75,000) / 3 = \text{€ } 37,66,750$$

3. Break Up Value

$$\text{Break Up Value can be the average of Book Value and Market Value} = (\text{€ } 37,66,750 + \text{€ } 40,00,000) \div 2 = \text{€ } 38,83,375$$

Question 2(b) – Foreign Currency Risk Management – Evaluation of Hedging Alternatives **8 Marks**

Nitrogen Ltd, a UK company is in the process of negotiating an order amounting to €4 million with a large German retailer on 6 months credit. If successful, this will be the first time that Nitrogen Ltd has exported goods into the highly competitive German market. The following three alternatives are being considered for managing the transaction risk before the order finalized.

- (i) Invoice the German firm in Sterling using the current exchange rate to calculate the invoice amount.
- (ii) Alternative of invoicing the German firm in € and using a forward foreign exchange contract to hedge the transaction risk.
- (iii) Invoice the German first in € and use sufficient 6 months sterling future contracts (to the nearly whole number) to hedge the transaction risk.

Following data is available:

Spot Rate	€1.1750 - €1.1770/£
6 months forward premium	0.60-0.55 Euro Cents
6 months further contract is currently trading at	€1.1760/£
6 months future contract size is	£ 62,500
Spot rate and 6 months future rate	€1.1785/£

Required:

- (a) Calculate to the nearest £ the receipt for Nitrogen Ltd, under each of the three proposals. **4 Marks**
- (b) In your opinion, which alternative would you consider to be the most appropriate and the reason therefore. **4 Marks**

Solution:

Note: Since question involves evaluation from a UK Exporter's perspective, he will sell (Pay) Foreign Currency and Receive (Buy) Home Currency relevant rate is the Bid Rate (under the Direct Quote model) and Ask Rate (under Indirect Quote Model). Exchange Rates are given in Indirect Quote Model in the question.

1. Currency Hedging (Invoicing in Sterling Pound Based on Spot Rate):

$$\begin{aligned}
 \text{Invoice Amount in £ (Pound Sterling)} &= \frac{\text{Amount in Euros}}{\text{Spot Exchange Rate}} \\
 &= \frac{€ 40,00,000}{1.1770} = \text{£ } 33,98,471 = \text{Amount received at } T_0.
 \end{aligned}$$

2. Forward Contract Hedging (Invoicing in Euro, and Entering into a Forward Contract):

- (a) **Nature of Contract:** Buy Pound Sterling Futures (or Sell Euro Futures)
- (b) **Forward Exchange Rate:** Since the swap points are quoted in descending order, the Sterling is quoted at a Discount in the Forward Market. Therefore, the forward rates are as follows —
 Forward Bid Rate for € / £ = Spot Rate € 1.1750 - €0.0060 = € 1.1690 per £ (Receive Euro Per Pound)
 Forward Ask Rate for € / £ = Spot Rate € 1.1770 - €0.0055 = € 1.1715 per £ (Pay Euro Per Pound)
- (c) **Relevant Rates:** Since invoicing is done in Euro, 6 months hence, Euro will be received by the UK Company, which it would sell to receive Pound Sterling. Therefore, Forward Ask Rate (under Indirect Quote Model) above is relevant.

$$\text{Value of Forward Contract in £ (Pound)} = \frac{€ 40,00,000}{1.1715} = \text{£ } 34,14,426 = \text{Amount received at } T_6.$$

3. Futures Contract Hedging (Invoicing in Euro, and Entering into a Futures Contract):

- (a) **Nature of Contract:** Buy Pound Sterling Futures (or Sell Euro Futures)
- (b) **Futures Exchange Rate:** € 1.1785 per £
- (c) **Lot Size:** £ 62,500 per Contract
- (d) **Value to be hedged:** Invoice € 40,00,000 ÷ Futures Rate € 1.1760 = £ 34,01,361
- (e) **No. of Contracts** = Value to be hedged £ 34,01,361 ÷ Lot Size £ 62,500 = 54.42 ≈ 54 Contracts
- (f) **Cash Flow at T₆: (Ignoring Interest Cost and Initial Margin Money)**

Euro Cash Flows

Cash Flow Description	€
Collection from Customer	40,00,000
Less: Euro Payable for buying Pound Futures (54 Contracts $\times$ £ 62,500 $\times$ T ₆ Spot Rate € 1.1785)	(39,77,438)
Add: Gain on MTM = (Closing Futures Price 1.1785 Less Contracted Futures Price 1.1760) $\times$ Pound Sterling Purchased under Futures Contract 33,75,000	8,438
Net Euros in Hand at T₆ (to be sold at Spot Rate at T ₆)	31,000
£ Received on Sale of above = € 31,000 $\div$ € 1.1785 per £	£ 26,305

Sterling Pound Cash Flows

Cash Flow Description	€
Receipt of Pound under Futures Contract (54 Contracts $\times$ £ 62,500)	33,75,000
Add: Inflow on Sale of Balance of Euro's in Hand	26,305
Total £ Inflow at T₆ under Futures Hedging	34,01,305

4. Evaluation and Reasoning:

- Inflow under Forward Contract Hedging is the maximum, and hence the UK Exporter should opt for the same.
- Forward Contract Hedge is more certain in terms of value receivable / payable as against Futures, which is affected by basis risk. It can also be entered into for any quantity of the underlying, as against Futures which can be entered into only for fixed sums (Lot Size).
- However, Forward Contract Hedge, being in the nature of a Private Contract, is affected by Performance Risk.

Question 3(a) – Capital Budgeting Decisions – Valuation of Strategy

10 Marks

Helium Ltd has evolved a new sales strategy for the next 4 years. The following information is given:

Income Statement	₹ In thousands
Sales	40,000
Gross Margin at 30%	12,000
Accounting, administration and distribution expenses at 15%	6,000
Profit before tax	6,000
Tax at 30%	1,800
Profit after tax	4,200
Balance sheet information	₹ In thousands
Fixed Assets	10,000
Current Assets	6,000
Equity	15,000

- As per the new strategy, sales will grow at 30 percent year for the next four years. The gross margin ratio will increase to 35 percent. The Assets turnover ratio and income tax rate will remain unchanged.
- Depreciation is to be at 15 percent on the value of the net fixed assets at the beginning of the year.
- Company's target rate of return is 14%.
- Determine if the strategy is financially viable giving detailed workings.

Solution:

1. Computation of Cash Flow after Taxes

Particulars	Year 1	Year 2	Year 3	Year 4
Sales (30% Increase per annum)	52,000	67,600	87,880	1,14,244
Gross Margin @ 35% of Sales	18,200	23,660	30,758	39,985
Less: Administration Expenses (15% of Sales)	(7,800)	(10,140)	(13,182)	(17,137)
Depreciation	(1,500)	(1,950)	(2,535)	(3,296)
Profit before Taxes	8,900	11,570	15,041	19,552
Profit after Tax (PBT $\times$ 70%)	6,230	8,099	10,529	13,686
Add: Depreciation	1,500	1,950	2,535	3,296
Cash Flow after Tax	7,730	10,049	13,064	16,982
Less: Cash Flows on Asset Increase	(6,300)	(8,190)	(10,647)	(13,841)
Net Cash Flows from New Strategy	1,430	1,859	2,417	3,141
Discount Factor @ 14%	0.8772	0.7695	0.6750	0.5921
Discounted Cash Flows	1,254	1,431	1,631	1,860
Therefore Present Value of Strategy	₹ 6,176			

2. Computation of Fixed Assets and Current Assets

- Assumptions:** (a) Asset Turnover Ratio is based on Turnover to Closing Value of Assets.
 (b) Ratio between Fixed Assets and Current Assets is assumed to be constant (i.e. at 5 : 3).
 (c) Changes in Asset base is assumed to be reflected only on the Equity i.e. there is no change in Debt / Liability position over the next four years.

Ratio of Assets to Sales	= Assets ÷ Sales	= 16,000 ÷ 40,000	= 40%
Ratio of Fixed Assets	= Fixed Assets ÷ Sales	= 10,000 ÷ 40,000	= 25%
Ratio of Current Asset	= Current Assets ÷ Sales	= 6,000 ÷ 40,000	= 15%

Particulars	Year 1	Year 2	Year 3	Year 4
A. Fixed Assets				
Closing Balance (Sales × 25%)	13,000 (52,000 × 25%)	16,900 (67,600 × 25%)	21,970 (87,880 × 25%)	28,561 (114,244 × 25%)
Less: Opening Balance	10,000 (given)	13,000	16,900	21,970
Add: Depreciation for the year (Opg. Bal. × 15%)	1,500	1,950	2,535	3,296
Addns. to Fixed Assets during the year	4,500	5,850	7,605	9,886
B. Current Assets				
Closing Balance (Sales × 15%)	7,800 (52,000 × 15%)	10,140 (67,600 × 15%)	13,182 (87,880 × 15%)	17,137 (114,244 × 15%)
Less: Opening Balance	(6,000)	(7,800)	(10,140)	(13,182)
Additions to Current Assets	1,800	2,340	3,042	3,955
Total Asset Additions (Cash Outflows)	6,300	8,190	10,647	13,841

Conclusion: Since, the Cash Flows are positive in all the years and the Initial Investment is nil, the Strategy is feasible. Also, the increase in Assets are totally funded by internal earnings, and funds are not required to be procured from outside. Therefore, there is increase in value, without increase in number of Equity Shareholders.

Question 3(b) – Fixed Income Instruments – Conversion into Equity

6 Marks

Pineapple Ltd has issued fully convertible 12 percent debentures of ₹ 5,000 face value, convertible into 10 equity shares. The current market price of the debentures is ₹ 5,400. The present market price of equity shares is ₹ 430.

Calculate:

- The conversion percentage premium, and
- The conversion value

3 Marks

3 Marks

Solution:

- Converted Value of Equity Shares:** 10 Equity Shares × ₹ 430 per Share = ₹ 4,300
- Market Value of Bond:** ₹ 5,400 per Debenture
- Conversion Percentage Premium:** Premium on Conversion ÷ Face Value of Debenture
 - Premium on Conversion (w.r.t to Face Value):**
 Converted Value ₹ 4,300 **Less** Face Value ₹ 5,000 = (₹ 700) i.e. Discount %
 - Premium Percentage (or Discount Percentage) (w.r.t. to Face Value)**
 Discount Amount ÷ Face Value = 700 ÷ 5000 = 14%
 - Premium on Conversion (w.r.t to Current Market Value):**
 Converted Value ₹ 4,300 **Less** Current Market Value ₹ 5,400 = (₹ 1,100) i.e. Discount %
 - Premium Percentage (or Discount Percentage) (w.r.t. to Current Market Value)**
 Discount Amount ÷ Face Value = 1100 ÷ 5400 = 20.37%

Question 4(a) – Fixed Income Instruments – Valuation and Yield

8 Marks

Based on the credit rating of the bonds, A has decided to apply the following discount rates for valuing bonds:

Credit rating	Discount rate
AAA	364 day T-bill rate + 3% spread
AA	AAA + 2% spread
A	AAA + 3% spread

He is considering to invest in a AA rated ₹ 1,000 face value bond currently selling at ₹ 1,025.86. The bond has five years to maturity and the coupon rate on the bond is 15 percent per annum payable annually. The next interest payment is due one year from today and the bond is redeemable at par. (Assume the 364-day T-bill rate to be 9 percent).

You are required to:

- Calculate the intrinsic value of the bond for A. Should he invest in the bond?
- Calculate the Current Yield (CY) and the Yield to Maturity (YTM) of the bond.

Solution:

1. Computation of Intrinsic Value
(a) Present Value of Interest Cash Flow

Particulars	Value
Face Value	₹ 1,000
Coupon Rate	15%
Annual Interest Payable	₹ 150
Period to Maturity	5 Years
Discount Rate [T-Bill Rate 9% + 3% + 2%]	14%
Annuity Factor for 5 Years at 14%	3.4331
Present Value of Cash Flows on account Interest Flow	514.95

(b) Present Value of Maturity Proceeds

Particulars	Value
Maturity Proceeds = Face Value	₹ 1,000
PV Factor at 14% at the end of 5 Years	0.519
Present Value of Maturity Proceeds	₹ 519

(c) Intrinsic Value

Intrinsic Value = PV of Interest Flows + PV of Maturity Proceeds
= ₹ 514.95 + ₹ 519 = ₹ 1033.95

2. Action on Bond

Particulars	₹
Value of Bond [Expected Price = Intrinsic Value]	₹ 1,033.95
Actual Market Price per Bond	₹ 1,025.86
Evaluation [Actual Price vs. Expected Price]	Actual Price is Lower
Inference	Bond is Underpriced
Action	BUY

3. Yield based on Current Market Price [Yield to Maturity]

Alternative 1: Internal Rate of Return Method:

Particulars	Face Value	Intrinsic Value
Value of Bond	₹ 1,000 [V ₁]	₹ 1,033.95 [V ₂]
Yield Percentage	15% p.a. [R ₁]	14% p.a. [R ₂]

Note: If the Expected Rate of Return = Coupon Rate, and the bond will be redeemed at face value, then value of the bond will be equivalent to the Face Value.

$$\begin{aligned}
 \text{Yield to Maturity}[Y] &= R_2 + \frac{[V_2 - V_M]}{[V_2 - V_1]} \times [R_1 - R_2] \\
 &= 14\% + \frac{1033.95 - 1025.86}{1033.95 - 1000.00} \times [15\% - 14\%]
 \end{aligned}$$

$$= 14\% + \frac{8.09}{33.95} \times 1\% = 14\% + 0.24\% = \mathbf{14.24\%}$$

Alternative 2: Formula Method

$$\text{YTM} = \frac{\left[\text{Coupon Payment} + \frac{(\text{Redemption Price} - \text{Purchase Price})}{\text{Period to Maturity}} \right]}{[(\text{Redemption Price} + \text{Purchase Price})/2]}$$

$$= \frac{\frac{₹ 150 + \frac{1000 - 1025.86}{5 \text{ Years}}}{[(₹ 1000 + ₹ 1025.86)/2]}}{\frac{₹ 150 - ₹ 5.17}{₹ 1012.93}} = \mathbf{14.30\%}$$

4. Current Yield

$$\text{Current Yield} = \text{Coupon Payment} \div \text{Current Market Price} = ₹ 150 \div 1025.86 = \mathbf{14.62\%}$$

Question 4(b) – Financial Services – Evaluation of Leasing**8 Marks**

XYZ Ltd. is considering to acquire an additional computer to supplement its time-share computer services to its clients. It has two options:

- To purchase the computer for ₹ 22,00,000.
- To lease the computer for three years from a leasing company for ₹ 5,00,000 as annual lease rent plus 10 percent of gross time-share service revenue. The agreement also requires an additional payment of ₹ 6,00,000 at the end of the third year. Lease rent is payable at the year end, and the computer reverts to the lessor after the contract period.

The company estimates that the computer under review now, will be worth ₹ 10,00,000 at the end of third year. Forecast revenues are:

Year	₹
1	22,50,000
2	25,00,000
3	27,50,000

Annual operating costs (excluding depreciation / lease rent of computer) are estimated at ₹ 9,00,000 with an additional ₹ 1,00,000 for start-up and training cost at the beginning of the first year. These costs are to be borne by the lessee. XYZ Ltd. will borrow at 16% interest to finance acquisition of computer, repayments are to be made according to the following schedule:

Year-end	Principal (₹)	Interest (₹)	Total (₹)
1	5,00,000	3,52,000	8,52,000
2	8,50,000	2,72,000	11,22,000
3	8,50,000	1,36,000	9,86,000

The company uses straight line method to depreciate its assets and pays 50 percent tax on its income.

The management of XYZ Ltd. approaches you for advice. Which alternative would you recommend and why?

Solution:**1. Computation of Cash Flows under Purchase Option****(a) Present Value of Cash Outflows**

End of Year	Interest Paid	Principal Repaid	After Tax Interest Payment	Tax Savings on Depreciation	Total Cash Flow for the year	PV Factor @ 8%	Discounted Cash Flow
(1)	(2)	(3)	(4) = (2) × 0.50	(5)	(6) = (3) + (4) – (5)	(7)	(8) = (6) × (7)
1	3,52,000	5,00,000	1,76,000	2,00,000	4,76,000	0.926	4,40,776
2	2,72,000	8,50,000	1,36,000	2,00,000	7,86,000	0.857	6,73,602
3	1,36,000	8,50,000	68,000	2,00,000	7,18,000	0.794	5,70,092
							16,84,470
Less: Salvage Value at the end of Year 3 = ₹ 10,00,000 × 0.794							7,94,000
Net Present Cost							8,90,470

Note: Annual Depreciation = (Cost of Asset – Salvage Value) ÷ Useful Life
 = (22,00,000 – 10,00,000) ÷ 3 Years = ₹ 4,00,000

Tax Savings on Depreciation = Depreciation × Tax Rate = ₹ 4,00,000 × 50% = ₹ 2,00,000

2. Computation of Cash Flows under Lease Option

- Discount Factor is ascertained based on After Tax Cost of Debt i.e. $16\% \times 50\% = 8\%$.

Year	Lease Rental	10% Gross Revenue	Lump sum Payment	Total Cash flows	After Tax Cash flows	Disc factor @ 8%	Discounted Cash Flow
[1]	[2]	[3]	[4]	[5]	[6] = [5] × 0.50	[7]	[8]
1	5,00,000	2,25,000	–	7,25,000	3,62,500	0.926	3,35,675
2	5,00,000	2,50,000	–	7,50,000	3,75,000	0.857	3,21,375
3	5,00,000	2,75,000	6,00,000	13,75,000	6,87,500	0.794	5,45,875
							12,02,925

Note: Operating and Training Costs are common in both alternatives hence not considered while calculating Net Present Value of Cash Flows.

Conclusion: Since the Present Value of Cash Flows under Purchase Option is lesser than the Present Value of Cash Flows under Lease Option, Purchase Option has to be undertaken.

Question 5(a) – Business Valuation – Impact of Restructuring**10 Marks**

The following is the Balance-sheet of Grape Fruit Company Ltd as at March 31st, 2011.

Liabilities	(₹ In lakhs)	Assets	(₹ In lakhs)
Equity shares of ₹ 100 each	600	Land and Building	200
14% preference shares of ₹ 100 each	200	Plant and Machinery	300
13% Debentures	200	Furniture and Fixtures	50
Debenture interest accrued and payable	26	Inventory	150
Loan from bank	74	Sundry debtors	70
Trade creditors	340	Cash at bank	130
		Preliminary expenses	10
		Cost of issue of debentures	5
		Profit and Loss Account	525
Total	1,440	Total	1,440

The Company did not perform well and has suffered sizable losses during the last few years. However, it is felt that the company could be nursed back to health by proper financial restructuring. Consequently the following scheme of reconstruction has been drawn up:

- Equity shares are to be reduced to ₹ 25/- per share, fully paid;
- Preference shares are to be reduced (with coupon rate of 10%) to equal number of shares of ₹ 50each, fully paid up.
- Debenture holders have agreed to forgo the accrued interest due to them. In the future, the rate of interest on debentures is to be reduced to 9 percent.
- Trade creditors will forego 25 percent of the amount due to them.
- The company issues 6 lakh of equity shares at ₹ 25 each and the entire sum was fully subscribed to promoters.
- Land and building was to be revalued at ₹ 450 lakhs, Plant and Machinery was to be written down by 120 lakhs and a provision of ₹ 15 lakhs had to be made for bad and doubtful debts.

Required:

- Show the impact of financial restructuring on the company's activities.
- Prepare the fresh balance sheet after reconstruction is completed on the basis of the above proposals.

Solution:

1. Reconstruction A/c (₹ Lakhs)

Particulars	₹	Particulars	₹
To Plant and Machinery A/c	120.00	By Equity Share Capital A/c [6 Lakh Share × (₹ 100- ₹ 25)]	450.00
To Preliminary expenses A/c	10.00	By 14% Pref. Share Capital A/c (200 Lakhs × ₹ 50/ ₹ 100)	100.00
To Cost of issue of debentures A/c	5.00	By Accrued Interest on Debentures A/c	26.00
To Profit and Loss Account A/c	525.00	By Trade Creditors A/c (340 × 25%)	85.00
To Provision for Bad Debts A/c	15.00	By Land and Building A/c (₹ 450 Lakhs – ₹ 200 Lakhs)	250.00
To Capital Reserve C/f	236.00		
Total	911.00	Total	911.00

2. Balance Sheet of Grape Fruit Company Limited as on 31/03/2011 after Reconstruction (₹ Lakhs)

Liabilities	₹ Lakhs	Assets	₹ Lakhs
1. Share Capital		1. Fixed Assets:	
12 Lakh Equity shares of ₹ 25 each fully paid up	300.00	Land & Bldg (₹ 200 Lakhs + ₹ 250 Lakhs)	450.00
2 Lakh 10% Preference Shares of ₹ 50 each	100.00	Plant & Machinery (₹ 300 Lakhs – ₹ 120 Lakhs)	180.00
2. Reserves and Surplus		Furniture and Fixtures	50.00
Capital Reserve	236.00	2. Current Assets:	
3. Secured Loans		Inventory	150.00
9% Debentures A/c	200.00	Sundry Debtors (₹ 70 Lakhs – ₹ 15 Lakhs)	55.00
Loan from Bank	74.00	Cash and Bank (₹ 130 Lakhs + ₹ 150 Lakhs)	280.00
4. Current Liabilities			
Trade Creditors (₹ 340 Lakhs – ₹ 85 Lakhs)	255.00		
Total	1165.00	Total	1165.00

3. Impact of Financial Restructuring

- (a) **On Capital Base:** Equity Capital has been reduced, and due to additional equity shares issued to Promoters, their stake in the Company has increased.
- (b) **On Debt Base (including Preference Capital):** The base of Fixed Cost Funds have reduced, and also the cost of such funds is also reduced. This contributes to a better equity earnings.
- (c) **Restatement of Asset:** Restatement of Assets to their fair value will help in knowing in the true return on investment, and would help compare with the benchmark industry data.
- (d) **Infusion of Capital:** Infusion of capital by promoters, coupled with lower cost of funds, will result in increased amount available for capital expansion. This would further result in increased earnings due to increased business.

Question 5(b) – Foreign Currency Risk Management – Leading vs. Lagging**6 Marks**

An Indian importer has to settle an import for \$ 1,30,000 has given the Indian exporter two options:

- (i) Pay immediately without any interest charges.
- (ii) Pay after three months with interest at 5 percent per annum.

The importer's bank charges 15 percent per annum on overdrafts. The exchange rates in the market are as follows:

Spot rate (₹ / \$): 48.35 / 48.36

3-Months forward rate (₹ / \$): 48.81 / 48.83

The importer seeks your advice. Give your advice.

Solution:

Inference: Since the Indian Importer has to buy foreign currency for settlement – The Relevant Rate is Ask Rate

Alternative One – Immediate Payment by utilizing Bank Finance

Particulars	Amount
Import Value Payable	\$ 1,30,000
Relevant Rate = Spot Ask Rate (₹ Per \$)	48.36
Rupee Payable = Borrowed from Rupee Banker (\$ 1,30,000 × 48.36)	62,86,800
Add: Interest for 3 Months (62,86,800 × 15% × 3/12)	2,35,755
Total Amount Payable at T ₃ towards Import Liability	₹ 65,22,555

Alternative Two – Immediate Payment by utilizing Bank Finance

Particulars	Amount
Import Value Payable (in US \$)	\$ 1,30,000
Add: Interest at 5% p.a. for 3 months (\$ 1,30,000 × 5% × 3/12)	\$ 1,625
Total Liability in US \$ as at T₃	1,31,625
Relevant Rate = Forward Ask Rate (₹ Per \$)	48.83
Total Amount Payable at T ₃ towards Import Liability (\$ 1,31,625 × ₹ 48.83 per \$)	₹ 64,27,249

Conclusion: Alternative Two (pay three months later, using Forward Rate) is better, since it involves lower cash outflow.

Question 6(a) – Portfolio Management – Modifying Portfolio Beta**8 Marks**

A portfolio Manager (PM) has the following four stocks in his portfolio:

Security	No. of shares	Market Price Per Share (₹)	β
VSL	10,000	50	0.9
CSL	5,000	20	1.0
SML	8,000	25	1.5
APL	2,000	200	1.2

Compute the following:

- Portfolio beta.
- If the PM seeks to reduce the beta to 0.8, how much risk free investment should he bring in?
- If the PM seeks to increase the beta to 1.2, how much risk free investment should he bring in?

Solution:**1. Computation of Portfolio Beta**

Security	No. of shares held	MPS (₹)	Market value of investments	Beta	Product
[1]	[2]	[3]	[4]	[5]	[6] = [5] × [4]
VSL	10,000	50	5,00,000	0.9	4,50,000
CSL	5,000	20	1,00,000	1.0	1,00,000
SML	8,000	25	2,00,000	1.5	3,00,000
APL	2,000	200	4,00,000	1.2	4,80,000
			12,00,000		13,30,000

Therefore, Portfolio Beta = Product ÷ Market Value = 13,30,000 ÷ 12,00,000 = 1.108

2. Reduce Beta to 0.8

Beta can be reduced by replacing High Beta stocks in the portfolio with Risk Free investments, which carry a Beta of Zero.

Security	Beta	Proportion (Amt. Invested)	Product
Risk Free Investments	0	X	0
Risky Securities	1.108	1 - X	1.108 - 1.108x
		1	1.108 - 1.108x

Therefore, Portfolio Beta = Product ÷ Amount Invested = $\frac{1.108 - 1.108x}{1} = 0.8$ Therefore, $1.108x = 1.108 - 0.8 \Rightarrow 1.108x = 0.308 \Rightarrow x = 0.278$ or 27.8% for Risk Free Investments and 72.2% for Risky Investments. Therefore, amount to be invested in Risk Free Investments is as follows —**(a) Alternative One – Overall Portfolio Value is Retained at ₹ 12,00,000:**

Amount to be invested in Risk Free Investments = 27.8% of ₹ 12,00,000 = ₹ 3,33,600. [= Value of Risky Investments Sold, and replaced by Risk Free Investments]. Therefore, Risky Investments will constitute ₹ 8,66,400 (comprising the four securities in the existing ratio)

(b) Alternative Two – Overall Portfolio Value is increased:

- Therefore, existing Risky Investments will not be disturbed. Therefore, investments in Risky Securities will be ₹ 12,00,000 (constituting 72.2%)
- Amount of New Risk Free Investments = $\frac{12,00,000}{72.2\%} \times 27.8\% = ₹ 4,62,050$.

3. Increase Portfolio Beta to 1.2

Increase in Portfolio Beta can be done by replacing Low Beta securities with High Beta securities. Since, it has to be done using Risk Free Securities, amount can be borrowed at Risk Free Rate and invested in Risky Securities.

Security	Beta	Proportion (Amt. Invested)	Product
Risk Free Investments	0	X	0
Risky Securities	1.108	1 - X	1.108 - 1.108x
		1	1.108 - 1.108x

Therefore, Portfolio Beta = Product ÷ Amount Invested = $\frac{1.108 - 1.108x}{1} = 1.2$

Therefore, $1.108x = 1.108 - 1.2 \Rightarrow 1.108x = -0.092 \Rightarrow x = -0.083$ or 8.3% for Risk Free Borrowings. Therefore, and 108.3% of existing Portfolio Value to be invested in Risky Securities.

Therefore, Amount of Risk Free Borrowings = ₹ 12,00,000 × 8.3% = 99,600. i.e. ₹ 99,600 to be borrowed at Risk Free Rate and Invested in Risky Securities in the same proportion as existing.

Question 6(b)

8 Marks

ABC established the following spread on the Delta Corporation's stock:

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

The current price of Delta Corporation's stock is ₹ 500. Determine ABC's profit or loss if the price of Delta Corporation's stock.

- (a) Stays at ₹ 500 after 3 months.
- (b) Falls to ₹ 350 after 3 months.
- (c) Rises to ₹ 600.

Solution:

1. Nature of Strategy

- (a) **Meaning:** Strangle is a case where the investor holds / writes a call option and a put option with different strike prices, but the same expiry date.
- (b) **Basis:**
 - Market is highly volatile.
 - There is a need to make the best use of the time value of money.

2. Payoff for Call Option

Spot Price (1)	Exercise Price (2)	Action (3)	Gross Value (4) = (2) – (1)	Net Pay–Off (5) = (4)– Premium of ₹ 30
350	550	Lapse	Nil	(30)
500	550	Lapse	Nil	(30)
600	550	Exercise	50	20

3. Pay off for Put Option

Spot Price (1)	Exercise Price (2)	Action (3)	Gross Value (4) = (2) – (1)	Net Pay–Off (5) = (4)–Premium of ₹ 5
350	450	Exercise	100	95
500	450	Lapse	Nil	(5)
600	450	Lapse	Nil	(5)

4. Net Payoff Table

Spot Price (1)	Net Payoff in Call Option (2)	Net Payoff in Put Option (3)	Total (4)	No. of Options (5)	Net Profit of Spread (6)=4 × 5
350	(30)	95	65	100	6,500
500	(30)	(5)	(35)	100	(3,500)
600	20	(5)	15	100	1,500

Question 7

4 × 4= 16 Marks

Write short notes on any FOUR of the followings:

(a) Capital Rationing:

1. **Resource Constraint:** There may be situations where a Firm has a number of projects that yield a positive NPV. However, the most important resource in investment decisions, i.e. funds, are not fully available to undertake all the projects. Such a situation is considered as a Resource Constraint situation.
2. **Capital Rationing:** In case of restricted availability of funds, the objective of the firm is to maximize the wealth of shareholders with the available funds. Such investment planning is called Capital Rationing. There are two possible situations of Capital Rationing –

- (a) Generally, Firms fix up maximum amount that can be invested in capital projects, during a given period of time, say a year. This budget ceiling imposed **internally** is called as **Soft Capital Rationing**.
- (b) There may be a market constraint on the amount of funds available for investment during a period. This inability to obtain funds from the market, due to **external factors** is called **Hard Capital Rationing**.

3. **NPV Maximization:** Whenever Capital Rationing exists, the Firm should allocated the limited funds available in such a way that maximizes the NPV of the Firm. The following principles may be applied in selecting the appropriate investment proposals / combinations –

Nature of Project	Indivisible	Divisible
Meaning	Investment should be made in full. Partial or Proportionate investment is not possible.	Partial Investment is possible and proportionate NPV can be obtained.
Steps involved in Decision-making	- Determine the combination of projects to utilise amount available. - Compute NPV of each combination. - Select combination with maximum NPV	- Compute PI of various projects and rank them based on PI. - Projects are selected based on maximum Profitability Index.

4. **Other Factors:** In the above procedure, it is assumed that the investment funds are restricted for one period only, i.e. if investment is not made immediately, the project will lapse. However, in the following situations, additional mathematical techniques are adopted to resolve the Capital Rationing problem –
 - (a) Cost of investment projects spread over several periods,
 - (b) Projects providing relatively higher cash flows in earlier years, which can be used for increasing the fund availability for other projects in those early years.

(b) Embedded derivatives

1. **Meaning:** An embedded derivative is a derivative instrument that is embedded in a separate host contract. The host contract might be a debt or equity instrument, a lease, an insurance contract or a sale or purchase contract.
2. **Nature:** An embedded derivative is a component of a hybrid (combined) instrument that also includes a non-derivative host contract, with the effect that some of the cash flows of the combined instrument vary in a way similar to a stand-alone derivative.
3. **Origin:** An embedded derivative can arise from deliberate financial engineering and intentional shifting of certain risks between parties.
4. **Changes in Cash Flow:** An embedded derivative causes modification to a contract's cash flow, based on changes in a specified variable.
5. An embedded derivative should be separated from the host contract and considered as a derivative if :
 - (a) the economic characteristics and risks of the embedded derivative are not closely related to the economic characteristics and risks of the host contract and
 - (b) A separate instrument with the same terms as the embedded derivative can be considered a derivative.

(c) Depository Participant:

1. A Depository Participant (DP) is an agent of the depository through which it interfaces with the investor and provides depository services.
2. Public financial institutions, scheduled commercial banks, foreign banks operating in India with the approval of the Reserve Bank of India, state financial corporations, custodians, stock-brokers, clearing corporations /clearing houses, NBFCs and Registrar to an Issue or Share Transfer Agent complying with the requirements prescribed by SEBI can be registered as DP.
3. Banking services can be availed through a branch whereas depository services can be availed through a DP.
4. **Examples:** Brokerage Firms such as Kotak Securities, Sharekhan, Angel Broking also act as Depository Participants. Note: CDSL and NSDL are Depositories and not depository participants.

(d) Money market mutual fund:

1. **Regulatory Framework:** Instructions based on recommendations of the Task force constituted under the chairmanship of Shri D. Basu on MMMFs were as follows –
 - (a) No Minimum Amount of Investments prescribed.
 - (b) Minimum lock-in-period is 46 days.
 - (c) Minimum of 25 percent of funds (20 percent earlier) shall be invested in treasury bills and dated Government securities having an unexpired maturity upto one year.
 - (d) Maximum of 30 percent of funds (20 percent earlier) shall be diverted to call money market.
 - (e) Investment in Commercial Papers restricted to 15 percent.
 - (f) Maximum of 20 percent of funds may be invested in commercial transactions and accepted/co-accepted by banks.
 - (g) Investments in Capital Market Instruments have been barred so as to avoid undue risks.

- (h) Borrowing and Lending between schemes of the Money Market Mutual Funds and between Sponsoring bank and the Money Market Mutual Funds are also prohibited. Switching of assets between Schemes will have to be at Market rates and based on conscious investment decisions.

2. **Regulatory impediments for the success of Money Market Funds:**

- (a) The Lock-in period hampers the liquidity of the fund. An Money Market Fund should ideally operate like a savings account.
- (b) Investors expect to get more than what they would get on bank fixed deposits. Considering the administrative expenses involved, the yield on Money Market Funds should be relatively higher.
- (c) Retail investors have to be educated about Money Market Funds. A huge network is needed to target such investors.
- (d) A large corpus is needed to deal in the money market on a consistent basis.
- (e) No regulatory body has been determined.

(e) **Leading and lagging:**

- 1. **Meaning:** Leading is accelerating the payment time. Lagging is delaying the payment. A Company which has surplus cash can lead or lag the payment based on the movement in foreign exchange rates.
- 2. **Risks / Benefits:** There is no uncertainty involved, if payments are going to be made immediately. The disadvantage is non-utilization of credit facility offered by the Vendor. Leading the payment would mean non-availability of funds for any exigencies during the period till due date.

(f) **Take over by reverse bid**

- 1. **Meaning:** It is the act of a smaller company gaining control over a larger one.
- 2. **Features:**
 - (a) **Control to Management of the Larger Company:** In Reverse-Takeover, control goes to the shareholders (and usually management) of the company that is formally the target of the bid i.e. Management of the larger company.
 - (b) **Purchase of Listed Company by Unlisted Company:** Reverse takeover is also applicable to the purchase of a listed company by an unlisted company with control passing to the shareholders and management of the unlisted company. This is known as a 'back door listing'. A Reverse Takeover will take place by way of a pure equity acquisition, also called a **Share Swap**.
- 3. **Tests for identifying Takeover by Reverse Bid:**
 - (a) Assets of the transferor company (Selling Company) are greater than that of the transferee company (Buying Company).
 - (b) Equity Capital to be issued by the transferee company pursuant to the acquisition exceeds its original issued capital.
 - (c) Change of control in the transferee company will be through the introduction of minority holder or group of holders.