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**IDEAL ANSWERS**  
**CA Final**  
**(Old Syllabus)**  
**Financial Management**

May, 2010 Exam

| An analysis of exam paper                                                                                                                                                                     |           |                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------|
| <ul style="list-style-type: none"><li>• <b><u>100% Questions</u></b> from the concepts taught in NPA Classroom</li><li>• question worth <b><u>49 marks Similar to NPA notes</u></b></li></ul> |           |                                      |
| Exam Q. No.                                                                                                                                                                                   | Marks     | NPA-Notes                            |
| 1(a)                                                                                                                                                                                          | 12        | Page 190, Que.1 & 3                  |
| 2(a)                                                                                                                                                                                          | 10        | Page 184, Que.32                     |
| 2(b)                                                                                                                                                                                          | 5         | Page 36, Que.11                      |
| 3(b)                                                                                                                                                                                          | 4         | Page 15, Que.46, IPCC Notes          |
| 3(c)                                                                                                                                                                                          | 10        | Sharpe Portfolio Optimization, Que.1 |
| 4(b)                                                                                                                                                                                          | 8         | Page 147, Que. 45                    |
| <b>Total</b>                                                                                                                                                                                  | <b>49</b> |                                      |

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(Disclaimer: Questions asked in the exam may have wrong/inadequate information and/or ambiguous language. In that case the answers provided by institute may differ from this Ideal Answers. Every step has been taken to make accurate these answers, still if you find some clerical errors, please bring it to our notice through email. )

**Question 1(a)**

Alfa Ltd. desires to acquire a diesel generating set costing Rs. 20 lakh which will be used for a period of 5 years. It is considering two alternatives (i) taking the generating set on lease or (ii) purchasing the asset outright by raising a loan. The company has been offered a lease contract with a lease payment of Rs. 5.2 lakh per annum for five years payable in advance. Company's banker requires the loan to be repaid @ 12% p.a. in 5 equal annual installments, each installment being due at the beginning of the each year. Tax relevant depreciation of the generator is 20% as per WDV method. At the end of 5<sup>th</sup> year the generator can be sold at Rs. 2, 00, 000. Marginal Tax rate of Alfa Ltd. is 30% its post tax cost of capital is 10%.

Determine:

- (a) The net advantage of leasing to alfa Ltd. and recommend whether leasing is financially viable.  
 (b) Break even lease rental.

**Answer 1(a)****Option 1: Lease**

**Step 1: PV of lease rents:** Outflow of lease rent x Present Value Annuity Due Factor (10%, 5)  
 $-5.2 \times 4.170$   
 $-21.68$

**Step 2 : PV of tax benefit on lease rents:** Rent X tax rate X PVAF (10%,5)  
 $5.2 \times .3 \times 3.791$   
 $5.91$

**Step 3: Net Cash Flows:**  $-21.68 + 5.91 = -15.77$

**Option 2: Loan****Working Notes:**

- 1) Loan Installment: Loan Amount = Installment x Present value annuity due factor (12%,5)

$$20 = A \times 4.0373$$

$$A = 4.95 \text{ Lakhs}$$

- 2) Loan Amortization Table:

| Year | Interest | Principal | Balance |
|------|----------|-----------|---------|
| 0    | 0.00     | 4.95      | 15.05   |
| 1    | 1.81     | 3.15      | 11.90   |
| 2    | 1.43     | 3.53      | 8.37    |
| 3    | 1.00     | 3.95      | 4.42    |
| 4    | 0.53     | 4.42      | 0.00    |

- 3) Depreciation Chart:

| Year | Depreciation @20% |
|------|-------------------|
| 1    | 4.00              |
| 2    | 3.20              |
| 3    | 2.56              |
| 4    | 2.05              |
| 5    | 1.64              |
| WDV  | 6.55              |

**Step 1: PV of Annual Cash Flows:**

| Year                               | Installment | Tax Benefit on |      | Net CF | PVF@10% | PV     |
|------------------------------------|-------------|----------------|------|--------|---------|--------|
|                                    |             | Interest       | Dep. |        |         |        |
| 0.00                               | -4.95       | 0.00           | 0.00 | -4.95  | 1.000   | -4.95  |
| 1.00                               | -4.95       | 0.54           | 1.20 | -3.21  | 0.909   | -2.92  |
| 2.00                               | -4.95       | 0.43           | 0.96 | -3.57  | 0.826   | -2.95  |
| 3.00                               | -4.95       | 0.30           | 0.77 | -3.88  | 0.751   | -2.92  |
| 4.00                               | -4.95       | 0.16           | 0.61 | -4.18  | 0.683   | -2.86  |
| 5.00                               | 0.00        | 0.00           | 0.49 | 0.49   | 0.621   | 0.31   |
| Present Value of Annual Cash Flows |             |                |      |        |         | -16.29 |

**Step 2: PV of Terminal Cash Flows:**

| Particular                  | Amount |
|-----------------------------|--------|
| Salvage Value               | 2.00   |
| Tax Benefit on Capital loss | 1.37   |
| Total                       | 3.37   |
| Present value               | 2.09   |

**Step 3: Net Cash Flows:**  $-16.29 + 2.09 = -14.2$ 

**Conclusion:** Net Advantage of lease =  $14.2 - 15.77 = -1.57$ . Therefore we can conclude that loan option is better than lease.

**Calculation of Break Even Lease Rent**

Lest us assume that the break even lease rent is Rs. X.

PV of lease rents =  $-4.170X$

PV of tax benefit on lease rents =  $\text{Rent X tax rate X PVAF (10\%,5)}$   
 $0.3X \times 3.791$   
 $1.1373X$

Net Cash Flows =  $-3.0327X$

Break Even Lease Rent:  $-3.0327X = -14.2$   
 $X = 4.68 \text{ Lakhs}$

**Question 1(b)**

The credit sales and receivables of M/s M Ltd. at the end of the year are estimated at Rs.3, 74,00,000 & Rs.46,00,000 respectively. The average variable overdraft interest rate is 5%. M Ltd. is considering a proposal for factoring its debts on a non-recourse basis at an annual fee of 3% on credit sales. As a result, M Lts. Will save Rs. 1, 00,000 per year in administrative cost and Rs. 3, 50,000 as bad debts. The factor will maintain.

A receivables period of 30 days and advance 80% of the face value thereof at an annual interest rate of 7%. Evaluate the viability of the proposal.

Note: 365 days are to be taken in a year for the purpose of calculation of receivables.

**Answer 1(b)****Option 1: Factoring****Step 1:** Commission to Factor = 374 lakhs x 3% = 11.22 Lakhs**Step 2:** Interest to Factor = 374 lakhs x 80% x 7% x 30/365 = 1.72 Lakhs**Step 3:** Cost of own fund = 374 lakhs x 20% x 5% x 30/365 = 0.31 Lakhs**Step 4:** Total Cost of Factoring = 13.25 Lakhs**Option 2: In House Management****Step 1:** Interest on overdraft = 46 Lakhs x 5% = 2.3 lakhs**Step 2:** Administrative Expenses = 1 lakh**Step 3:** Bad Debts = 3.5 lakhs**Step 4:** Total Cost = 6.8 lakhs**Conclusion:** Factoring proposal is not acceptable.**Question 2(a)**

Following information's are available in respect of XYZ Ltd. which is expected to grow at a higher rate for 4 years after which growth rate will stabilize at a lower level:

Base year information:

|                     |   |     |              |
|---------------------|---|-----|--------------|
| Revenues            | - | Rs. | 2,000 crores |
| EBIT                | - | Rs. | 300 crores   |
| Capital expenditure | - | Rs. | 280 crores   |
| Depreciation        | - | Rs. | 200 crores   |

Information for high growth and stable growth period are as follows:

|                               | <u>High Growth</u> | <u>Stable Growth</u>    |
|-------------------------------|--------------------|-------------------------|
| Growth in Revenue & EBIT      | 20%                | 10%                     |
| Growth in capital expenditure |                    | Capital expenditure are |
| And depreciation              | 20%                | offset by depreciation  |
| Risk free rate                | 10%                | 9%                      |
| Equity beta                   | 1.15               | 1                       |
| Market risk premium           | 6%                 | 5%                      |
| Pre-tax cost of debt          | 13%                | 12.86%                  |
| Debt equity ratio             | 1 : 1              | 2 : 3                   |

For all time, working capital is 25% of revenue and corporate tax rate is 30%. What is the value of the firm?

**Answer 2(a)****Step 1: Calculation of Cost of Capital****High Growth Phase:**

$$K_e = R_f + (R_m - R_f)\beta = 10 + 6 \times 1.15 = 16.9\%$$

$$K_d = \text{Interest Rate} \times (1-t) = 13 \times 0.7 = 9.1\%$$

$$K_o = \frac{K_d \times D + K_e \times E}{D + E} = \frac{9.1 \times 1 + 16.9 \times 1}{2} = 13\%$$

**Stable Growth Phase:**

$$K_e = R_f + (R_m - R_f)\beta = 9 + 5 \times 1 = 14\%$$

$$K_d = \text{Interest Rate} \times (1 - t) = 12.86 \times 0.7 = 9\%$$

$$K_o = \frac{K_d \times D + K_e \times E}{D + E} = \frac{9 \times 2 + 14 \times 3}{5} = 12\%$$

**Calculation of Working Capital**

| Year            | 0      | 1      | 2      | 3      | 4       | 5       |
|-----------------|--------|--------|--------|--------|---------|---------|
| Revenue         | 2000   | 2400   | 2880   | 3456   | 4147    | 4562    |
| Working Capital | 500.00 | 600.00 | 720.00 | 864.00 | 1036.80 | 1140.48 |
| Change in WC    |        | 100.00 | 120.00 | 144.00 | 172.80  | 103.68  |

**Step2: Valuation of Firm:**

| Year              | 1       | 2       | 3       | 4       | 5 to ∞   |
|-------------------|---------|---------|---------|---------|----------|
| EBIT              | 360.00  | 432.00  | 518.40  | 622.08  | 684.29   |
| Tax               | -108.00 | -129.60 | -155.52 | -186.62 | -205.29  |
| PAT               | 252.00  | 302.40  | 362.88  | 435.46  | 479.00   |
| Depreciation      | 240.00  | 288.00  | 345.60  | 414.72  | -        |
| Capex             | -336.00 | -403.20 | -483.84 | -580.61 | -        |
| WC-Cash flows     | -100.00 | -120.00 | -144.00 | -172.80 | -103.68  |
| Net Cash Flows    | 56.00   | 67.20   | 80.64   | 96.77   | 375.32   |
| PVF@13%           | 0.885   | 0.783   | 0.693   | 0.613   | 30.666   |
| Present Value     | 49.56   | 52.63   | 55.89   | 59.35   | 11509.56 |
| Value of the Firm |         |         |         |         | 11726.99 |

Present Value factor for year **5 to ∞** for the deferred growing perpetuity :

$$PVF = \frac{A}{r - g} \times \frac{1}{(1 + r)^m} = \frac{1}{0.12 - 0.10} \times \frac{1}{(1.13)^4} = 30.666$$

**Question 2(b)**

A Mutual fund has a NAV of Rs. 20 on 1.12.09. During December, 2009, it has earned a regular Income of Rs. 0.0375 and capital gain of Re. 0.03 per annual return. On 31.12.09, the NPV was Rs.20.06. Calculate the monthly return and annual return.

**Answer 2(b)**

$$\text{Annual Return} = \frac{D_1 + P_1}{P_0} - 1 = \frac{(0.03 + 0.0375) + 20.06}{20} - 1 = 0.6375\% \text{ per month}$$

$$= 7.65\% \text{ p.a.}$$

**Question 2(c)**

Write a short note on the role of the financial advisor in a public sector undertaking.

**Answer 2(c)**

The financial adviser occupies an important position in all public sector undertakings. He functions as the principal advisor to the chief executive of the enterprise on all financial matters. The committee on public sector undertakings has specified the following functions and responsibilities for a financial adviser:

1. Determination of financial needs of the firm and the ways these needs are to be met.
2. Formulation of a program to provide most effective cost-volume profit relationship.
3. Analysis of financial results of all operations and recommendations concerning future operations.
4. Examination of feasibility studies and detailed project reports from the point of view of overall economic viability of the project.
5. Conduct of special studies with a view to reduce costs and improve efficiency and profitability.

**Question 3(a)**

A call and put exist on the same stock each of which is exercisable at Rs. 60. They now trade for :

|                                      |        |
|--------------------------------------|--------|
| Market price of stock or stock index | Rs. 55 |
| Market price of call                 | Rs. 9  |
| Market price of put                  | Rs. 1  |

Calculate the expiration date cash flow, investment value, and net profit from :

- (i) Buy 1.0 call
- (ii) Write 1.0 call
- (iii) Buy 1.0 put
- (iv) Write 1.0 put

For expiration date stock prices of Rs. 50, Rs.55, Rs. 60, Rs. 65, Rs. 70.

**Answer 3(a)**

Note: There is a conceptual error in the question. Call premium is given as Rs.9 and Put premium is given as Re.1. This is wrong. Because Strike price (Rs.60) is more than current market price (Rs.55) then call remains cheaper than put.

| Buy Call ( Strike Price Rs.60) |                        |                    |            | Buy Put ( Strike Price Rs.60) |                        |                    |            |
|--------------------------------|------------------------|--------------------|------------|-------------------------------|------------------------|--------------------|------------|
| Expiry date stock price        | Expiry date cash flows | Initial Investment | Net Profit | Expiry date stock price       | Expiry date cash flows | Initial Investment | Net Profit |
| 50                             | -                      | -9                 | -9         | 50                            | 10                     | -1                 | 9          |
| 55                             | -                      | -9                 | -9         | 55                            | 5                      | -1                 | 4          |
| 60                             | -                      | -9                 | -9         | 60                            | -                      | -1                 | -1         |
| 65                             | 5                      | -9                 | -4         | 65                            | -                      | -1                 | -1         |
| 70                             | 10                     | -9                 | 1          | 70                            | -                      | -1                 | -1         |

| Write Call ( Strike Price Rs.60) |                        |                    |            | Write Put ( Strike Price Rs.60) |                        |                    |            |
|----------------------------------|------------------------|--------------------|------------|---------------------------------|------------------------|--------------------|------------|
| Expiry date stock price          | Expiry date cash flows | Initial Investment | Net Profit | Expiry date stock price         | Expiry date cash flows | Initial Investment | Net Profit |
| 50                               | -                      | 9                  | 9          | 50                              | -10                    | 1                  | -9         |
| 55                               | -                      | 9                  | 9          | 55                              | -5                     | 1                  | -4         |
| 60                               | -                      | 9                  | 9          | 60                              | -                      | 1                  | 1          |
| 65                               | -5                     | 9                  | 4          | 65                              | -                      | 1                  | 1          |
| 70                               | -10                    | 9                  | -1         | 70                              | -                      | 1                  | 1          |

**Question 3(b)**

Mr. A is thinking of buying shares at Rs. 500 each having face value of Rs. 100. He is expecting a bonus at the ratio 1 : 5 during the fourth year. Annual expected dividend is 20% and the same rate is expected to be maintained on the expanded capital base. He intends to sell the shares at the end of seventh year at an expected price of Rs. 900 each. Incidental expenses for purchase and sell of shares are estimated to be 5% of the market price. He expects a minimum return of 12% per annum. Should Mr. A buy the share? If so, what maximum price should he pay for each share ? Assume no tax on dividend income and capital gain.

**Answer 3(b)**

- 1) For first three years dividend is Rs.20 per share.
- 2) For next four years dividend is Rs.20 per share x 1.2 shares = Rs.24
- 3) Sale proceeds in the seventh year=  $900 - 5\% = 855$   
 $855 \times 1.2 = 1026$

| Year       | Rs.     | PVF@12% | PV     |
|------------|---------|---------|--------|
| 1          | 20.00   | 0.893   | 17.86  |
| 2          | 20.00   | 0.797   | 15.94  |
| 3          | 20.00   | 0.712   | 14.24  |
| 4          | 24.00   | 0.636   | 15.25  |
| 5          | 24.00   | 0.567   | 13.62  |
| 6          | 24.00   | 0.507   | 12.16  |
| 7          | 1050.00 | 0.452   | 474.97 |
| Fair Value |         |         | 564.03 |

Fair Value is Rs.564.03, while the shares is currently available for Rs. 525 (500+5%), hence it is recommended to buy the share.

**Question 3(c)**

Ramesh wants to invest in stock market. He has got the following information 10 About individual securities:

| Security | Expected Return | Beta | $\sigma_{ei}^2$ |
|----------|-----------------|------|-----------------|
| A        | 15              | 1.5  | 40              |
| B        | 12              | 2    | 20              |
| C        | 10              | 2.5  | 30              |
| D        | 09              | 1    | 10              |
| E        | 08              | 1.2  | 20              |
| F        | 14              | 1.5  | 30              |

Market index variance is 10 percent and risk free rate of return is 7%. What should be the optimum portfolio assuming no short sales?

**Answer 3(c)**

Note: There are two Problems in the question:

- 1) Symbol given with variance is "ci" while it should have been "ei", which is the symbol of residual variance.
- 2) Question does not specify the method of solution. But looking at the data it appears that it is required to be solved by Sharpe Portfolio Optimization Model.

| Security | Expected Return ( $R_i$ ) | $R_i - R_f$ | $\beta_i$ | $(R_i - R_f)/\beta_i$ | Rank |
|----------|---------------------------|-------------|-----------|-----------------------|------|
| A        | 15                        | 8           | 1.5       | 5.33                  | 1    |
| B        | 12                        | 5           | 2         | 2.50                  | 3    |
| C        | 10                        | 3           | 2.5       | 1.20                  | 5    |
| D        | 9                         | 2           | 1         | 2.00                  | 4    |
| E        | 8                         | 1           | 1.2       | 0.83                  | 6    |
| F        | 14                        | 7           | 1.5       | 4.67                  | 2    |

$$C_i = \frac{\sigma_m^2 \sum_{i=1}^i \frac{(R_i - R_f)\beta_i}{\sigma_{ei}^2}}{1 + \sigma_m^2 \sum_{i=1}^i \frac{\beta_i^2}{\sigma_{ei}^2}}$$

| Security | $\frac{(R_i - R_f)\beta_i}{\sigma_{ei}^2}$ | $\frac{\sum (R_i - R_f)\beta_i}{\sigma_{ei}^2}$ | $\frac{\beta_i^2}{\sigma_{ei}^2}$ | $\sum \frac{\beta_i^2}{\sigma_{ei}^2}$ | $C_i$ | $Z_i$  |
|----------|--------------------------------------------|-------------------------------------------------|-----------------------------------|----------------------------------------|-------|--------|
| A        | 0.300                                      | 0.300                                           | 0.056                             | 0.056                                  | 1.920 | 0.0946 |
| F        | 0.350                                      | 0.650                                           | 0.075                             | 0.131                                  | 2.811 | 0.0928 |
| B        | 0.500                                      | 1.150                                           | 0.200                             | 0.331                                  | 2.667 |        |
| D        | 0.200                                      | 1.350                                           | 0.100                             | 0.431                                  | 2.541 |        |
| C        | 0.250                                      | 1.600                                           | 0.208                             | 0.640                                  | 2.163 |        |
| E        | 0.060                                      | 1.660                                           | 0.072                             | 0.712                                  | 2.045 |        |

$$\sigma_m^2 = 10\%$$

The value of  $C^*$  is 2.811 and equal to  $C_2$ .



**Calculation of the percent to be invested in each security:**

$$X_i = Z_i / \sum_{i=1}^n Z_i$$

$$Z_i = \frac{\beta_i}{\sigma_{e_i}^2} \left( \frac{(R_i - R_f)}{\beta_i} - C^* \right)$$

$$Z_1 = \frac{1.5}{40} (8 - 2.811) = 0.0946$$

$$Z_2 = \frac{1.5}{30} (5 - 2.811) = 0.0928$$

$$\sum_{i=1}^2 Z_i = 0.1874$$

$$X_1 = \frac{0.0946}{0.1874} = 0.5048 = 50.48\%$$

$$X_2 = \frac{0.0928}{0.1874} = 0.4952 = 49.52\%$$

Conclusion: Out of total 6 securities available, we should select only security 1 & 6 and should give them weight of 50.48% and 49.52% respectively.

**Question 4(a)**

ABC, a large business house is planning to sell its wholly owned subsidiary KLM. Another large business entity XYZ has expressed its interest in making a bid for KLM. XYZ expects that after acquisition the annual earning of KLM will increase by 10%. Following information, ignoring any potential synergistic benefits arising out of possible acquisitions are available.

- (i) Profit after tax for KLM for the financial year which has just ended is estimated to be Rs. 10 crore.
- (ii) KLM's after tax profit has an increasing trend of 7% each year and the same is expected to continue.
- (iii) Estimated post tax market return is 10% and risk free is 4%. These rates are expected to continue.
- (iv) Corporate tax rate is 30%.

|                     | XYZ      | ABC     | Proxy entity for KLM<br>In the same line of<br>Business |
|---------------------|----------|---------|---------------------------------------------------------|
| No. of shares       | 100 lakh | 80 lakh | ---                                                     |
| Current share price | Rs. 287  | Rs. 375 | ---                                                     |
| Dividend pay out    | 40%      | 50%     | 50%                                                     |
| Debt : Equity at    |          |         |                                                         |
| Market values       | 1 : 2    | 1 : 3   | 1:4                                                     |
| P/E ratio           | 10       | 13      | 12                                                      |
| Equity beta         | 1        | 1.1     | 1.1                                                     |

Assume gearing level of KLM to be the same as for ABC and a debt beta of zero. You are required to calculate:

- (a) Appropriate cost of equity for KLM based on the data available for the proxy entity.
- (b) A range of Values for KLM both before and after any potential synergistic benefits to XYZ of the acquisition.

**Answer 4(a)****(a) Cost of equity for KLM:**

$$\beta_L = \beta_U \left( 1 + \frac{\text{Debt}}{\text{Equity}} (1 - \text{tax rate}) \right)$$

$$1.1 = \beta_U \left( 1 + \frac{1}{4} \times 0.7 \right)$$

$$\beta_U = 0.9326$$

$$\beta_L = 0.9326 \left( 1 + \frac{1}{4} \times 0.7 \right)$$

$$\beta_L = 1.1546$$

$$K_e = R_f + (R_M - R_f)\beta = 4 + (10 - 4)1.1546 = 10.93\%$$

**(b) Valuation of KLM:**

Before Synergy:

$$P_0 = \frac{D_1}{K_e - g} = \frac{5.35}{0.1093 - .07} = 136.13cr.$$

$$D_1 = 10 \times (1.07) \times 0.5 = 5.35$$

After Synergy:

Language of the question suggests that growth rate will remain 7% but profit base will increase by 10%.

$$P_0 = \frac{D_1}{K_e - g} = \frac{5.885}{0.1093 - .07} = 149.75cr.$$

$$D_1 = 11 \times (1.07) \times 0.5 = 5.885$$

**Question 4(b)**

A ltd. of U.K. has imported some chemical worth of USD 3, 64,897 from one of the U.S. suppliers.

The amount is payable in six months time. The relevant spot and forward rates are:

|                       |                     |
|-----------------------|---------------------|
| Spot rate             | USD 1.5617- 1.5673  |
| 6 months forward rate | USD 1.5455 – 1.5609 |

The borrowing rates in U.K. and U.S. are 7% and 6% respectively and the deposit rates are 5.5% and 4.5% respectively.

Currency option is available under which one option contract is for GBP 12,500. The option premium for GBP at a strike price of USD 1.70/GBP is USD 0.037 (call option) and USD 0.096 (put option) for 6 months period.

The company has 3 choices:

- (i) Forward cover
- (ii) Money market cover, and
- (iii) Currency option

**Answer 4(b)**

(i) **Forward Cover:**  $\$364897 / 1.5455 = \text{£}236103$

**(ii) Money Market Hedge:**

- 1) Borrow £ 228512.19 @7% p.a.
- 2) Convert into dollars:  $228512.19 \times 1.5617 = \$356867.48$
- 3) Invest in USA @4.5%:  $\$356867.48 \times 1.0225 = \$364897$
- 4) Pay import bill out of the above proceeds.
- 5) Repay pound borrowings:  $\text{£}228512.19 \times 1.035 = \text{£}236510$

**(iii) Currency Option:**

Working Note: Calculation of no. of lots

$\$364897 / 1.7 = \text{£}215233$

$\text{£}215233 / \text{lot of } \text{£}12500 = 17.21$  (approx. 17 lots)

Step 1: Put Option premium in terms of pounds

$\text{£}12500 \times 17 \text{ lots} \times \$0.96 = \$20400$

$\$20400 / 1.5617 = \text{£}13063$

Step 2: Pounds payable on exercise of Put options

$\text{£}12500 \times 17 = \text{£}212500$

Step 3: Forward contract for remaining amount of dollars

Forward contract amount = total dollars required – dollars available under option contract

$= \$364897 - (\text{£}212500 \times 1.7)$

$= \$364897 - \$361250$

$= \$3647$

$\$3647 / 1.5455 = \text{£}2360$

Step 4: Total pounds required under currency options

$= 13063 + 212500 + 2360 = \text{£}227923$

**Conclusion:** Currency option is the best tool available for hedging.

**Question 4(c)**

What is a depository? Who are the major players of a depository system? What advantages does the depository system offer to the clearing member?

**Answer 4(c)**

A rapid growth in volume of securities in the Indian Capital Market exposed the limitation of handling and dealing in securities in physical mode. Therefore there was a need to handle securities in electronic form. A Depository is a company which facilitates electronic holding and transfer of securities.

Presently there are two depositories in India:

- 1) National Security Depository Limited, which has been promoted by IDBI, UTI and NSE in June 1996 as the first depository in the Indian financial market.
- 2) Central Depository Services Limited, which has been promoted by BOI and BSE in February 1999.

**Functions of a Depository:**

The various services provided by the depository are as follows:

- 1) Dematerialisation of eligible securities.
- 2) Rematerialisation of eligible securities.
- 3) Settlement of securities traded on the stock exchange.
- 4) Settlement of off-market trades.
- 5) Facilitate pledging of securities
- 6) Provide of Securities Lending Scheme.

**Depository Participant:**

Depository Participant (DP) is the agent of depository and is the interface between the depository and investors. According to SEBI guidelines, financial institutions, banks, custodians, stockbrokers etc. can become depository participant.

**Advantages of Demat trading:**

From the point of view of investor-

- 1) Time saving: It is much speedier than physical transfer of securities.
- 2) Efforts saving: It avoids lot of paper work.
- 3) Cost effectiveness: It is cheaper than physical transfer on the following two counts:
  - i) Physical transfer attracts a stamp duty of 0.5% of market value of the securities transferred, while there is no such duty in the case of demat trading.
  - ii) Postage expenses are also saved in the case of demat trading
- 4) Risk elimination: Risk of loss in transit and forgery is totally eliminated in the case of demat trading.
- 5) Enhanced Liquidity: Due to Immediate transfer and registration of securities liquidity automatically enhances. Also higher amount can be borrowed from the banks in case of dematerialized securities as compared to physical securities.

**Question 5(a)**

ABC Bank is seeking fixed rate funding. It is able to finance at a cost of six months. LIBOR + ¼% for Rs. 200 million for 5 years. The bank is able to swap into a fixed rate at 7.5% versus six month LIBOR treating six months as exactly half a year.

- (a) What will be the "all in cost" funds to ABC Bank?
- (b) Another possibility being considered is the issue of a hybrid instrument which pays 7.5% for first three years and LIBOR – ¼% for remaining two years.

Given a three year swap rate of 8%, suggest the method by which the bank should achieve fixed rate funding.

**Answer 5(a)**

- (a) Take finance at the rate of LIBOR + 1/4% for 5 years

| Particulars        | Pay/Receive | 1       | 2       | 3       | 4       | 5       |
|--------------------|-------------|---------|---------|---------|---------|---------|
| Finance            | Pay         | L+0.25% | L+0.25% | L+0.25% | L+0.25% | L+0.25% |
| Swap               | Receive     | L       | L       | L       | L       | L       |
|                    | Pay         | 7.5%    | 7.5%    | 7.5%    | 7.5%    | 7.5%    |
| <b>Net Payment</b> |             | 7.75%   | 7.75%   | 7.75%   | 7.75%   | 7.75%   |

(b) Issue Hybrid Instruments:

| Particulars        | Pay/Receive | 1          | 2         | 3         | 4            | 5            |
|--------------------|-------------|------------|-----------|-----------|--------------|--------------|
| Hybrid Instrument  | Pay         | 7.5%       | 7.5%      | 7.5%      | L-0.25%      | L-0.25%      |
| Three Year Swap    | Receive     | 8%         | 8%        | 8%        |              |              |
|                    | Pay         | L          | L         | L         |              |              |
| Five Year Swap     | Receive     | L          | L         | L         | L            | L            |
|                    | Pay         | 7.5%       | 7.5%      | 7.5%      | 7.5%         | 7.5%         |
| <b>Net Payment</b> |             | <b>7 %</b> | <b>7%</b> | <b>7%</b> | <b>7.25%</b> | <b>7.25%</b> |

**Conclusion:** Looking at the net cost of each option it appears that issuing hybrid instrument is a better option.

### Question 5(b)

What do you know about swaptions and their uses?

### Answer 5(b)

A **swaption** is effectively an option to enter into Interest Rate Swap on a specified future date. A 3-month into 5-year swaption would therefore be seen as an option to enter into a 5-year IRS, 3 months from now. Swaption may be of following two types: Fixed 'payer' and fixed 'receiver'.

A fixed-rate payer swaption gives the buyer of the option the opportunity to lock into a fixed rate payment through an Interest Rate Swap on an agreed future date. Such a swaption can therefore be seen as a call option on a forward swap rate.

The 'option period' refers to the time which elapses between the transaction date and the expiry date. The fixed rate of interest on the swaption is called the strike rate. The simplest type of swaption available is an option to pay or receive fixed-rate money against receiving or paying floating-rate money.

They are usually European style options. As such, at maturity of the swaption, one can decide whether to exercise the swap or to let the swaption lapse unexercised.

**Uses of Swaption :** A customer has a \$10 Million obligation due in 5 years on a non-amortizing loan with XYZ bank, paying 3 mth. LIBOR + 200 bps. LIBOR is currently at 5.75%. The company is exposed to the risk of fluctuating interest rates. The customer has reason to believe that LIBOR will stay low for the next two years. After the two years time period however, the outlook is at best uncertain. The customer would like to hedge this risk but is not sure if the current swap rate is the best available. The customer wants to lock in the swap rate in two years time for the following three years and have the flexibility to benefit from a lower swap rate should swap rates fall. This is achieved by buying a 2 year option on a 3 year pay fixed 7% swap. The decision that the customer will have to face in two years is illustrated below:

After two year if 3-year swap rate is above 7%,  
(7%)

Swaption is exercised - Customer pay fixed  
and receives floating.

If 3 year swap rate is below or equal to 7%,

Swaption does not get exercised  
Customer pays floating on loan or enters  
into a 3 yr new fixed rate.

**Question 5(c)**

What are the reasons for stock index futures becoming more popular financial derivatives over stock futures segment in India?

**Answer 5(c)**

Futures are exchange-traded forward contracts. These are contracts to buy or sell an asset in future at a price agreed upon today. Here the underlying can be a share, index, interest rate, bond, rupee dollar exchange rate, commodities etc.

In an Index future underlying is any popular index. In India we have index futures on Sensex, Nifty, CNXIT, Bank Nifty, Nifty Midcap 50 etc. In stock futures underlying is share of a company listed on a recognized exchange. There are around 190 Securities on which stock futures are available.

Index futures are becoming more popular over stock futures due to following reasons:

- 1) Indices include many securities hence they are diversified. Therefore when an investor takes position in index future he bears only the market risk and not the risk on individual stock.
- 2) Index futures have more liquidity hence the impact cost reduces.
- 3) If the investor has an opinion on a particular sector then Index future on sector specific indices are also available.