

Question Paper

Security Analysis – I (211) : October 2005

Section A : Basic Concepts (30 Marks)

- This section consists of questions with serial number 1 - 30.
- Answer all questions.
- Each question carries one mark.
- Maximum time for answering Section A is 30 Minutes.

1. Which of the following correctly ranks the volatility of the following assets, in ascending order? [< Answer >](#)

- (a) Debentures, long-term government bonds, common stocks, and T-bills
- (b) T-bills, long-term government bonds, Debentures and common stocks
- (c) Common stocks, long-term government bonds, Debentures, and T-bills
- (d) T-bills, Debentures, long-term government bonds, and common stocks
- (e) Long-term government bonds, T-bills, Debentures and common stocks.

2. Mr. Sushil Sharma has formed a portfolio and the characteristics of his portfolio are given below: [< Answer >](#)

Security	Solar Ltd.	Polar Ltd.	Treasury Bill	Index Fund
Weight	0.07	0.25	0.25	0.43
β	1.72	0.89	?	?

Beta of his portfolio is

- (a) 0.8229 (b) 1.0229 (c) 0.5529 (d) 0.4629 (e) 0.7729.

3. Any person aggrieved by an order of SEBI can file an appeal petition to the central government. Such appeal has to be filed within _____ days from the date of communication of the order. However, the central government may extend the period by a further _____ days, if it is satisfied that the appellant had sufficient cause. [< Answer >](#)

- (a) 60, 30 (b) 45, 15 (c) 60, 15 (d) 30, 15 (e) 30, 10.

4. A listed company, after passing a special resolution, may buy back securities. Which of the following method(s) is/are **correct** for buy back of securities? [< Answer >](#)

- I. From existing security holders on a proportionate basis through a tender offer.
- II. From the open market through book-building process and/or stock exchange.
- III. From odd-lot holders.
- IV. From negotiated deals.

- (a) Only (II) above (b) Both (I) and (III) above
(c) (I), (II) and (IV) above (d) (I), (II) and (III) above
(e) All (I), (II), (III) and (IV) above.

5. Which of the following statement(s) is/are **true** about stop loss order? [< Answer >](#)

- I. A stop-loss order is an order to buy or sell when the price crosses a specified level.
- II. A stop-order to buy, enter above the prevailing market price, becomes a market order when the contract is either traded or bid at or above the price.
- III. If for stop loss buy order, the trigger is Rs.75.00, the limit price is Rs.78.00 and the last traded price is Rs.72, then this order is released into the system once the market price reaches or exceeds Rs.75.00.
- IV. In case of sale, the stop loss order clearly states that the sale should be executed at any price below the stop loss target.

- (a) Both (I) and (II) above (b) Both (II) and (III) above
(c) Both (III) and (IV) above (d) (I), (II) and (III) above
(e) (II), (III) and (IV) above.

6. Book-building process is different from fixed price process for raising share capital from public. Which of the following statement(s) is/are **true** about Book-building process compared to fixed price process? [< Answer >](#)

- I. Price at which securities will be offered/allotted is not known in advance to investor. Only an indicative price range is known.
- II. Demand for the securities offered can be known everyday.
- III. Payment is made at the time of subscription.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) Both (I) and (III) above.

7. Under CRISIL 500 equity index, which of the following is **not** the parameter for selection of the company? [< Answer >](#)

- (a) Market capitalization of the company
- (b) Industry representation
- (c) Trading interest in the scrips
- (d) Stock exchanges covered
- (e) Fundamentals of the company.

8. Which of the following statements are **true** about residual risk? [< Answer >](#)

- I. The residual risk in a well-diversified portfolio equals the average co-variance of the securities in the portfolio.
- II. Residual risk represents the market risk.
- III. Residual risk cannot be diversified away further.
- IV. Residual risk is the unsystematic risk.

- (a) Both (I) and (II) above
- (b) Both (II) and (III) above
- (c) (I), (II) and (III) above
- (d) (II), (III) and (IV) above
- (e) All (I), (II), (III) and (IV) above.

9. Which of the following statement(s) is/are **true** about the Lead Indicator Approach? [< Answer >](#)

- I. It does not convey message about the magnitude of change.
- II. It does not convey message about the duration of change.
- III. Different lead indicators may provide divergent signals.
- IV. It does not provide signals about the direction of economic activity.

- (a) Only (II) above
- (b) Only (III) above
- (c) Both (II) and (IV)
- (d) (I), (II) and (III) above
- (e) (I), (III) and (IV) above.

10. ABC Ltd. and XYZ Ltd. have identical return on assets of 12%. If ABC Ltd. has twice return on equity of XYZ Ltd., which of the following is **true**? [< Answer >](#)

- (a) Higher asset base of ABC Ltd.
- (b) Higher equity base of ABC Ltd.
- (c) Higher leverage of ABC Ltd.
- (d) Higher asset turnover of ABC Ltd.
- (e) Higher input cost of XYZ Ltd.

11. For a company, if beginning inventory is overstated by Rs.8,000, purchases are overstated by Rs.12,000 and ending inventory is understated by Rs.6,000, the net income will [< Answer >](#)

- (a) Be understated by Rs.26,000
- (b) Be overstated by Rs.26,000
- (c) Be understated by Rs.14,000
- (d) Be overstated by Rs.14,000
- (e) Not be affected.

12. Mr. Prashant purchased an annual interest coupon bond one year ago that had 6 years remaining to maturity at that time. The coupon interest rate was 10% and the par value was Rs.1,000. At the time he purchased the bond, the yield to maturity was 8%. If he sells the bond today after receiving the first interest payment and when the yield to maturity is 7%, his annual total rate of return on holding the bond for the year would be [< Answer >](#)

- (a) 4.05%
- (b) 7%
- (c) 8%
- (d) 9%
- (e) 11.95%.

13. In which of the following situations, the company profits are inflated? [< Answer >](#)

- I. Switching from straight line method of depreciation to written down value method during later years of the life of the asset.
- II. Writing off miscellaneous expenses over a period of time instead of capitalizing the expenses.
- III. Switching from LIFO to FIFO method of inventory valuation during decreasing prices.

- (a) Only (I) above
- (b) Only (III) above
- (c) Both (I) and (III) above
- (d) Both (II) and (III) above

(e) All (I), (II) and (III) above.

14. Which of the following statement(s) is/are **true** about the research and development expenditure incurred by the company according to Accounting Standard 8?

[< Answer >](#)

- I. Expenditure on pure research is to be written-off to the profit and loss accounts of the relevant period.
- II. Development research expenditure is to be deferred and amortized on a systematic basis either by reference to the sale and use of the product or process or by reference to a reasonable time period.
- III. Development research expenditure is to be deferred and amortized within a period of 8 years from the year in which it was incurred.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) Both (I) and (III) above.

15. ABC Co. Ltd. has the following EPS for the last four years:

[< Answer >](#)

Year Ended	March 31,2002	March 31,2003	March 31,2004	March 31,2005
EPS (Rs.)	5	7.2	8.3	9.2

Company has given bonus in the ratio of 1:3 in the financial year 2002-03.

Find the growth rate implicit in the adjusted EPS.

- (a) 22.54%
- (b) 34.87%
- (c) 27.67%
- (d) 26.67%
- (e) 29.25.

16. The EPS of PCL Technologies is Rs.8.00. The capital expenditure and depreciation per share is Rs. 7.40 and Rs.3.40 respectively. The increase in working capital is Rs.2.00. The debt ratio of the firm is 20%. The discount rate is 10%. If the growth rate is 22% for the company, the present value of cash inflows for the second year as per the Free Cash Flow to Equity (FCFE) model will be

[< Answer >](#)

- (a) Rs.3.87
- (b) Rs.4.30
- (c) Rs.3.20
- (d) Rs.5.20
- (e) Rs.4.76.

17. An investor bought a 14% bond at par value of Rs.1,000 maturing in five years. Duration at this point of time is 3.97 years. If YTM remains the same, what will be the decrease in the duration of the bond after one year?

[< Answer >](#)

- (a) 3 years
- (b) 3.36 years
- (c) 0.9 years
- (d) 0.65 years
- (e) 4 years.

18. Which of the following is **not true** about bond immunization?

[< Answer >](#)

- (a) Immunization means that investor has to sell a part or the whole of the portfolio and buy other securities so that the duration of the new portfolio coincides with the investor investment horizon
- (b) This is the strategy of matching the bond's duration with the time horizon of the investor
- (c) Investor can protect themselves from the interest rate risk through bond immunization
- (d) Immunization will provide a compound rate of return over the period immunized that equals the bond's YTM, irrespective of changes in market rates
- (e) Any unexpected change in the market value of the unmatured bond at the end of the investment horizon will be exactly equal in magnitude, but opposite in direction, to any unexpected change in the reinvestment income under immunization.

19. SIDBI came out with an issue of deep discount bond. Each bond having a face value of Rs.100000 was issued at a deep discounted price of Rs.5000 with a maturity period of 25 years from the date of allotment. You can apply tax rate as 20%. Indexation rate applicable is 6%. Find the post-tax yield to maturity of such a bond.

[< Answer >](#)

- (a) 12%
- (b) 9%
- (c) 8%
- (d) 8.5%
- (e) 15%.

20. The characteristics of five bonds are as given below:

[< Answer >](#)

Bond	Maturity (Years)	Coupon Rate (%)	Frequency of coupon payment in a year	Yield (%)
A	8	7.5	1	7.5
B	8	7.5	2	7.5
C	8	0	1	7.5
D	8	7.5	1	6.0
E	6	7.5	1	7.5

Which of the following sequence of bonds indicates bonds with increasing order of duration?

- (a) E, B, A, D, C (b) A, B, C, D, E (c) E, D, C, A, B
(d) B, D, E, A, C (e) A, B, C, E, D.

21. Which of the following statement(s) is/are **true** about Efficient Market Hypothesis?

[< Answer >](#)

- I. EMH signifies how quickly and accurately does relevant information show its effect on the asset prices.
II. EMH says that successive absolute short run price changes are independent.
III. Serial correlation and run test are for testing the semi-strong form of efficient market hypothesis.
IV. Weak form of efficient market hypothesis is also known as random walk model.

- (a) Both (I) and (II) above (b) Both (II) and (III) above
(c) (I), (II) and (III) above (d) (I), (II) and (IV) above
(e) All (I), (II), (III) and (IV) above.

22. Which of the following statement(s) is/are **true** about 'gaps'?

[< Answer >](#)

- I. The lowest price of the period after the gap is higher than the highest price of the preceding period.
II. Gaps cannot occur in a bar chart.
III. A series of runaway gaps is an indication of exhaustion gap.
IV. Runaway gaps are also called measuring gaps.

- (a) Only (I) above (b) Both (I) and (II) above
(c) Both (II) and (III) above (d) (I), (III) and (IV) above
(e) All (I), (II), (III) and (IV) above.

23. Following data pertaining to ABC Company Ltd. are given below :

[< Answer >](#)

Day	Closing price (Rs.)	100 EMA for previous day (Rs.)
1	72.00	60.00
2	75.00	60.50
3	73.00	61.00

Find the 100 day EMA for day 3.

- (a) Rs. 60.26 (b) Rs. 61.50 (c) Rs. 60.74 (d) Rs. 61.75 (e) Rs. 62.00

24. Which of the following option(s) is/are **not** in-the-money?

[< Answer >](#)

	Type of option	Strike Price (Rs.)	Market Price (Rs.)
I	Call	125	115
II	Call	150	110
III	Call	85	85
IV	Put	100	100
V	Put	150	125

- (a) Only (I) above (b) Only (V) above
(c) Both (III) and (IV) above (d) Both (I) and (V) above
(e) (I), (II), (III) and (IV) above.

25. Which of the following is/are the difference(s) between options and warrants?

[< Answer >](#)

- I. Options are traded but warrants are not.
II. Warrants can be created only when the company wants to issue them but options are available on organised exchanges with different maturities.
III. An exercise of warrants leads to increase in the stocks outstanding while the exercise of an option does not have any such effect.
IV. Each warrant is different/unique in itself, but call or put options are standardized.

- (a) Both (I) and (II) above (b) Both (II) and (IV) above
(c) (I), (II) and (III) above (d) (II), (III) and (IV) above
(e) (I), (III) and (IV) above.

26. In the futures market, due to the margin requirement and _____, the probability of default is non-existent.

[< Answer >](#)

- (a) Careful credit rating checks
(b) Daily realization of gains and losses

- (c) Allowing a discrete number of price changes per day
 (d) Keeping a required balance between long and short positions
 (e) Carefully analyzing investor's background.
27. At the beginning of a trading day, Mr. Ravi Shankar is in a long position in the futures market and his collateral is exactly at the required margin. If the closing futures price is above the opening price, what will happen at the end of the day? [< Answer >](#)
- (a) He will be subjected to a margin call
 (b) His account will be marked to market and losses will be transferred out
 (c) His account will be marked to market and gains will be transferred in
 (d) His losses will be offset by gains made by investors holding short positions
 (e) His losses will be carried forward to the next day.
28. A convertible bond with a face value of Rs.1,000 has been issued at Rs.1,350 with a coupon rate of 10.5%. The conversion rate is 14 shares per bond. The current market price of the bond is Rs.1,475 and that of stock is Rs.80. The premium over conversion value is [< Answer >](#)
- (a) 24.06% (b) 33.33% (c) 31.70% (d) 37.25% (e) 52.00%.
29. Which of the following is **not** the reason for attractiveness of real estate? [< Answer >](#)
- (a) Capital appreciation of real estate is, in general, very high
 (b) Loans are available from various Financial Institutions/Banks for buying or constructing real estate
 (c) Interest on loans taken for buying or constructing a residential home is tax deductible within certain limits
 (d) Real Estates are less illiquid
 (e) Ownership of a residential property provides psychological satisfaction.
30. Which of the following statement(s) is/are **not** correct about various types of mutual funds? [< Answer >](#)
- (a) In Income Funds, investment is made in various combinations of high yielding common stocks and bonds with a view to extract income on regular basis with safety of principal investment
 (b) Balanced funds have modest risk component
 (c) In Performance Funds, investment is made in buying equity shares of small companies with relatively high price/earnings ratio and higher price volatility
 (d) Units of close-ended schemes sell at values which can be more than or equal to or less than their NAV
 (e) Open-ended Mutual fund units are issued like any other company's new issues listed and quoted at stock exchange.

END OF SECTION A

Section B : Problems (50 Marks)

This section consists of questions with serial number 1 – 6.
 Answer **all** questions.
 Marks are indicated against each question.
 Detailed workings should form part of your answer.
 Do not spend more than 110 - 120 minutes on Section B.

1. An analyst is considering two stocks, Delta and Epsilon, for investing. Expected returns on these stocks depend on the growth rate of the GDP. The conditional returns of the market and the excess returns of the stocks over the return on market are given below:

Economic Scenario (GDP growth rate)	Probability	Excess Return in (%)		Return on Market in (%)
		Delta	Epsilon	
Less than 1.0%	0.03	15	41	-20
1.0-2.5%	0.10	9	20	-5
2.5-5.0%	0.27	0	-10	10
5.0-7.0%	0.20	-2	-21	20
More than 7%	0.40	-5	-34	30

The expected risk-free return is 5.5 percent. Assume that the CAPM holds good in the market.

You are **required** to

- Calculate the *ex-ante* betas for the two stocks.
- Determine which stock the analyst would suggest to invest, if he is required to select only one stock, justify.

(6 + 3 = 9 marks) [< Answer >](#)

2. The stock of Hindustan Oil Exploration Company Ltd. (HOEC) is currently trading at Rs.105.95. Based on the current market price, the P/E ratio is 16.18, P/B ratio is 3.91 and P/S ratio is 6.73.

Other fundamentals of HOEC are given below:

(In millions)

Sales	924.54
Net profit	384.84
Net worth	1593.25
Dividend per share	1
Number of shares of Rs.10 each.	58.75
Beta	2

The yield on the one-year treasury bill is 5.5% and the equity risk premium in the market is 8.00%.

You are **required** to

- Determine the required rate of return for equity holders and the sustainable growth rate of HOEC Ltd.
- Estimate the P/E, P/B and P/S ratios justified by the fundamentals.
- Based on your answer in part (b), explain whether the stock is fairly valued, overvalued or undervalued.

(1 + 6 + 3 = 10 marks) [< Answer >](#)

3. Mr. Biswajit expects that there will be annual cash outflows of Rs.1,20,000 for five years, starting from end of the second year from now. Mr. Biswajit wants to immunize the liability and is actively considering the following two bonds:

Bond A : A zero-coupon bond with a face value Rs.1,000, maturing after 6 years and is currently trading at Rs.506.63.

Bond B : 9% coupon bearing bond with a face value of Rs.1,000, maturing after 4 years, redeemable at par value and is currently trading at Rs.908.86.

The yield curve is expected to be stable in the near future.

You are **required** to

- Determine the proportion of funds to be invested in the bonds A and B so that the liability of Mr. Biswajit is immunized.

- b. If the interest declines by 1%, estimate the interest rate elasticity and interest rate risk associated with the bonds.
- c. State whether the proportion of investment recommended in (a) above offer perfect immunization and also give conditions to be fulfilled for perfect immunization.

(5 + 3 + 2 = 10 marks) [< Answer >](#)

4. Mr. Madhavan Kutty established the following spread on the NTPC Ltd. stock:

- i. Purchased one 3-month call option with a premium of Rs.1.05 and an exercise price of Rs.95.00.
- ii. Purchased one 3-month put option with a premium of Rs.0.70 and an exercise price of Rs.85.00.

The current price of NTPC Ltd. stock is Rs.90.20.

You are **required** to determine Mr. Madhavan Kutty's profit or loss if

- a. The price of NTPC Ltd. stays at Rs.90.20 after 3 months.
- b. The price of NTPC Ltd. falls to Rs.80.20 after 3 months.
- c. The price of NTPC Ltd. rises to Rs.95.20 after 3 months.

(Market lot of each contract is 3250 shares).

(2 + 2 + 2 = 6 marks) [< Answer >](#)

5. Mr. Suresh, a high income and high net worth investor is evaluating the following three alternatives for investing his surplus funds for medium to long-term period.

- I. Secured, redeemable and non-convertible bonds are issued by Infrastructure Development Corporation as per the following terms:

Date of issue	Face value and maturity Value (Rs.)	Issue price (Rs.)	Annual Coupon rate	Maturity date
01.04.2005	1000	983	Prime Lending Rate + 0.5%	31.03.2010

The following interest rates materialize on the various reset dates:

Reset dates	31.03.2005	31.03.2006	31.03.2007	31.03.2008	31.03.2009
PLR (%)	10.25	10.05	9.80	9.60	9.50

Tax rate applicable is 30%.

- II. IDBI Flexi bonds came out with an issue of discount bond. Each bond having a face value of Rs.6630 was issued at a discounted price of Rs.5000 with a maturity period of 5 years from the date of allotment. Assume a tax benefit of 15% on the invested amount.

You are **required** to:

- a. Find out the coupon rate of bond issued by Infrastructure Development corporation assuming that Pure Expectations Hypothesis holds good.
- b. Find out the post-tax YTM of the bond issued by Infrastructure Development Corporation.
- c. Find out the post-tax YTM of the IDBI Flexi bonds.
- d. Evaluate both the alternative investments for Mr. Suresh.

(3 + 3 + 2 + 2 = 10 marks) [< Answer >](#)

6. The closing price of Hindustan oil exploration corporation Ltd. (HOEC) are given below:

End of month	Share price of HOEC Ltd.
August 2004	79.45
September 2004	78.50
October 2004	80.65
November 2004	92.50
December 2004	88.80
January 2005	90.10
February 2005	95.25
March 2005	105.95
April 2005	145.40
May 2005	159.60
June 2005	194.65
July 2005	185.25

You are **required** to determine the probability that the return from the stock of HOEC Ltd. would be between zero

percent and 5 percent during August 2005.

(5 marks) [< Answer >](#)

END OF SECTION B

Section C : Applied Theory (20 Marks)

This section consists of questions with serial number 7 - 8.

Answer **all** questions.

Marks are indicated against each question.

Do not spend more than 25 -30 minutes on section C.

7. Irrationality affects trading, expectations and prices in capital markets. Several recent surveys summarize evidences about psychology of individuals and its relevance for financials and other economists. There are other possible reasons for systematic decision errors. With respect to this, explain the various behaviors of Investors and Security Analysts.

(10 marks) [< Answer >](#)

8. Liberalization of trade and production induced the international economy towards a single market, which allowed better and more efficient allocation of resources. Integration of stock market is an important area of development, that accompanied the globalization of securities market in the manner in which markets are regulated. With respect to this, explain the factors to be considered prior to integration of the market. Also explain the benefits and barriers in stock exchange integration.

(10 marks) [< Answer >](#)

END OF SECTION C

END OF QUESTION PAPER

Suggested Answers

Security Analysis – I (211) : October 2005

Section A : Basic Concepts

1. Answer: (b) [< TOP >](#)
Reason: Correct order is: T-bills, long-term government bonds, debentures and common stocks. All other options are incorrect.
Therefore, option (b) is the correct answer.
2. Answer : (e) [< TOP >](#)
Reason : $\text{Beta of the Portfolio} = 0.07 \times 1.72 + 0.25 \times 0.89 + 0.25 \times 0 + 0.43 \times 1 = 0.7729$
3. Answer : (d) [< TOP >](#)

- Reason : Such an appeal has to be filed within 30 days and can be further extended by 15 days by central government.
4. Answer : (d) [< TOP >](#)
Reason : A company shall not buy-back its shares from any person through negotiated deals, whether on or of the stock exchange or thorough spot transactions or through any private arrangement.
5. Answer: (d) [< TOP >](#)
Reason: Statement IV is incorrect. In case of sale, the stop loss order clearly states that the sale should not be executed at any price below the stop loss target.
Therefore, Option (d) is the correct answer.
6. Answer : (d) [< TOP >](#)
Reason : In book-building process, payment is made only after allocation. In fixed price process payment is made at the time of subscription whereas refund is possible after allocation.
7. Answer : (d) [< TOP >](#)
Reason : Selection of the companies has been made on the basis of four parameters:
a. Market capitalization of the company
b. Industry representation
c. Trading interests in the scrips.
d. Fundamentals of the company.
8. Answer: (c) [< TOP >](#)
Reason: The residual risk in a well-diversified portfolio equals the average co-variance of the securities in the portfolio, representing the market risk. This is the amount of risk that cannot be diversified away no matter how much the diversification of the portfolio. Residual risk is the systematic risk.
. Therefore, option (c) is the correct answer
9. Answer : (d) [< TOP >](#)
Reason : The lead indicator approach attempts to forecast the general economic conditions by identifying economic indicators that turn ahead of the change in the general level of economic activity. A lead indicator provides signals about the direction of economic activity.
10. Answer : (c) [< TOP >](#)
Reason : Return on Equity is increases due to leverage.
11. Answer : (a) [< TOP >](#)
Reason : Net income will be understated by Rs.26,000.
As overstating beginning inventory and purchases will decrease the net income and understating ending inventory will also have the same effect. Therefore net income will be understated by Rs.26000.
12. Answer: (e) [< TOP >](#)
Reason: Solution:
$$\text{Purchase price} = 100PVIFA_{(8\%,6)} + 1000PVIF_{(8\%,6)} = 1092.49$$
$$\text{Selling price} = 100PVIFA_{(7\%,5)} + 1000PVIF_{(7\%,5)} = 1123.02$$
$$\text{Total return} = 100 + 1123.02 - 1092.49 = 130.53$$
$$\therefore \% \text{ Return} = 11.95\%$$

Therefore, option (e) is the correct answer.
13. Answer : (a) [< TOP >](#)
Reason : The depreciation calculated under the written down value method is higher than that calculated under the straight line method in the initial years of the life of the asset, and is considerably lower under WDV method than under straight line method in the later years. Thus, switching from straight line method to WDV method in the later years

will increase the profit figure and vice versa. Hence, (I) is true. The amortization of preliminary expenses and other miscellaneous expenditure of a capital nature offers ample scope for increasing or decreasing the profits. There is no legal rule prescribed for the write-off of such expenditure. When the expenses are written off over a period of time, the profits during those periods will be low and if such expenses are capitalized, the profits will be high. Hence, statement (II) results in lower profits. Under inflationary circumstances, a company may switch over from the LIFO method to FIFO method and increase its profits and switching from FIFO to LIFO during decreasing prices result in increased profits. During decreasing prices, under FIFO method of inventory valuation, the value of stock consumed will be high and profits will be low whereas under LIFO, the stock consumed will be low and profits will be high. Hence, switching from LIFO to FIFO the profits will be decreased and statement (III) is incorrect and the answer is (a).

14. Answer : (d) [< TOP >](#)

Reason : Time period of write-off of the deferred research cost are left to the discretion of the company management.

15. Answer: (b) [< TOP >](#)

Reason: Solution: -

Bonus adjusted EPS for the year ended March 31,2004

$$\frac{9.2 \times 4}{3} = 12.267$$

$$\therefore 5(1+g)^3 = 12.267$$

$$\therefore g = 34.87\%$$

Therefore, Option (b) is the correct answer

16. Answer : (b) [< TOP >](#)

Reason :

Particulars	Year 0	Year 1	Year 2
EPS	8	9.76	11.91
(Capital expenditure – depreciation) (1 – debt ratio)	3.20	3.90	4.76
Change in working capital (1 – debt ratio)	-	1.60	1.952
FCFE		4.26	5.198
Present value		3.87	4.30

17. Answer: (d) [< TOP >](#)

Reason:

Solution: - Change in duration = 3.97-3.32 = 0.65 years.

	Year	Cash flow	PV @ 14%	Duration
	1	140	122.808	0.12281
	2	140	107.73	0.21546
	3	140	94.50	0.2835
	4	1140	674.994	2.7000
Total				3.32

Therefore, Option (d) is the correct answer.

18. Answer: (a) [< TOP >](#)

Reason: Option (a) is incorrect. Option (a) is the definition of portfolio rebalance and not of immunization. All other options are true.

Therefore, Option (a) is the correct answer.

19. Answer: (a) [< TOP >](#)

Reason:

Solution: -Post-tax redemption value

=Redemption value – [Redemption value – Indexed cost of acquisition] Tax rate

$$=100000 - [100000 - 5000(1.06)^{25}]0.2$$

$$=84292$$

Cost of acquisition $(1+r)^{25}$ = post-tax redemption value

$$5000(1+r)^{25} = 84292$$

$$\therefore r = 12\%$$

Therefore, Option (a) is the correct answer.

20. Answer : (a) [< TOP >](#)
Reason: Duration and YTM are inversely related and larger the coupon rate smaller the duration of bond. Duration of bond C is 8 years as the bond is zero coupon bond. Duration of bond D will be more than A as YTM of A is higher although coupon rates are equal and duration of bond E is lesser than duration of bond B as term to maturity is lower than bond B. Again an increase in the frequency of the Coupon payment decreases the duration therefore although coupon and YTM are same for the bond A and B because of higher frequency of payment duration will be lower for the bond B. Hence descending order of duration=E, B, A, D, C.
21. Answer : (d) [< TOP >](#)
Reason : Serial correlation and run test are for testing the weak form of efficient market hypothesis.
Therefore option (d) is the correct answer.
22. Answer : (d) [< TOP >](#)
Reason : The lowest price of the period after the gap is higher than the highest price of the preceding period is true.
Gaps can only be occurred in a bar chart.
A series of runaway gaps is an indication of exhaustion gap is true.
Runaway gaps are also called measuring gaps.
Hence the option (d) is the correct answer.
Hence the other options (a), (b), (c) and (e) are incorrect.
23. Answer : (c) [< TOP >](#)
Reason : The exponent for the 100-day EMA is $2/100 = 0.02$
Difference in EMA= $(73 - 61) (0.02) = 0.24$
100 day EMA for day 3= $60.50 + 0.24 = \text{Rs. } 60.74$.
24. Answer : (e) [< TOP >](#)
Reason : A call option is said to be in-the-money, if the market price of the underlying asset is greater than the strike price. A put option is said to be in the money, if the strike price is greater than the market price of the underlying asset. So all options except A are not in the money and the answer is (e).
25. Answer : (d) [< TOP >](#)
Reason : Options and warrant both are traded. All other statement are correct.
Therefore, option (D) is the correct answer.
26. Answer: (b) [< TOP >](#)
Reason: On the futures market, due to the margin requirement and daily realization of gains and losses the probability of default is lowered.
Therefore, Option (b) is the correct answer.
27. Answer: (c) [< TOP >](#)
Reason: In the situation, given your long position you have profited from the price increase.
Therefore, Option (c) is the correct answer.
28. Answer : (c) [< TOP >](#)

Reason : Conversion rate is 14 shares per bond

Market price per share is Rs.80

Conversion value = Rs.(80 × 14) = Rs.1120

Market price of the bond = Rs.1475

$$\therefore \text{Premium over conversion value} = \frac{355}{1120} \times 100 = 31.70\%.$$

Therefore, Option (c) is the correct answer.

29. Answer : (d)

[<TOP>](#)

Reason : A real estate represents a very attractive investment proposition for the following reasons:

Capital appreciation of real estate is, in general very high.

ii. Loans are available from various financial institutions/banks for buying or constructing real estate.

iii. Interest on loans taken for buying or constructing a residential home is tax deductible within certain limits.

iv. Ownership of a residential property provides psychological satisfaction.

Hence (a), (b), (c) and (e) are correct. However real estate are more illiquid and are not a reason for attractiveness and hence (d) is the answer.

30. Answer : (e)

[<TOP>](#)

Reason : Close-ended Mutual fund units are issued like any other company's new issues listed and quoted at stock exchange.

Therefore, Option (e) is the correct answer.

Section B : Problems

1. a.

Return on Market (%)	Excess return over Market (%)		Stock Return (%)	
-20	15	41	-5	21
-5	9	20	4	15
10	0	-10	10	0
20	-2	-21	18	-1
30	-5	-34	25	-4

Probability (p)	Delta				Market Index				
	Exp Return (r_a)	$p \times r_a$	$(r_a - \bar{r}_a)$	$(r_a - \bar{r}_a)^2 \times p$	Exp Return (r_m)	$p \times r_m$	$(r_m - \bar{r}_m)$	$(r_m - \bar{r}_m)^2 \times p$	$(r_a - \bar{r}_a)(r_m - \bar{r}_m) \times p$
1	2	3	4	5	6	7	8	9	10
0.03	-5.00	-0.15	-21.55	13.93	-20.00	-0.60	-37.60	42.41	24.31
0.10	4.00	0.40	-12.55	15.75	-5.00	-0.50	-22.60	51.08	28.36
0.27	10.00	2.70	-6.55	11.58	10.00	2.7	-7.60	15.60	13.44
0.20	18.00	3.60	1.45	0.4205	20.00	4.00	2.40	1.152	0.70
0.40	25.00	10.00	8.45	28.56	30.00	12.00	12.40	61.50	41.91

$$\text{Mean } (\bar{r}_a) = \sum p \times r_a = 16.55$$

$$\text{mean } (\bar{r}_m) = \sum p \times r_m = 17.60$$

$$\text{Variance} = \sum (r_a - \bar{r}_a)^2 \times p = 70.24$$

$$\text{variance} = \sum (r_m - \bar{r}_m)^2 \times p = 171.74$$

$$\text{SD} = 8.38$$

$$\text{SD} = 13.11$$

$$\text{Covariance} = \sum (r_a - \bar{r}_a)(r_m - \bar{r}_m) \times p = 108.72$$

Probability (p)	Epsilon				Market Index				
	Exp Return (r_b)	$p \times r_b$	$(r_b - \bar{r}_b)$	$(r_b - \bar{r}_b)^2 \times p$	Exp Return (r_m)	$p \times r_m$	$(r_m - \bar{r}_m)$	$(r_m - \bar{r}_m)^2 \times p$	$(r_b - \bar{r}_b)(r_m - \bar{r}_m) \times p$
1	2	3	4	5	6	7	8	9	10
0.03	21.00	0.63	20.67	12.82	-20.00	-0.60	-37.60	42.41	-23.32
0.10	15.00	1.50	14.67	21.52	-5.00	-0.50	-22.60	51.08	-33.15
0.27	0.00	0.00	-0.33	0.03	10.00	2.70	-7.60	15.60	0.68
0.20	-1.00	-0.20	-1.33	0.35	20.00	4.00	2.40	1.152	-0.64
0.40	-4.00	-1.60	-4.33	7.50	30.00	12.00	12.40	61.50	-21.48

$$\text{Mean } (\bar{r}_b) = \sum p \times r_b = 0.33$$

$$\text{Mean } (\bar{r}_m) = \sum p \times r_m = 17.60$$

$$\text{Variance} = \sum (r_b - \bar{r}_b)^2 \times p = 42.22$$

$$\text{variance} = \sum (r_m - \bar{r}_m)^2 \times p = 171.74$$

$$\text{SD} = 6.50$$

$$\text{SD} = 13.11$$

$$\text{Covariance} = \sum (r_b - \bar{r}_b)(r_m - \bar{r}_m) \times p = -77.91$$

$$\text{Beta of Delta} = \frac{\text{Cov}_{a,m}}{\sigma_m^2} = 0.6330$$

$$\text{Beta of Epsilon} = \frac{\text{Cov}_{a,m}}{\sigma_m^2} = -0.4537$$

b. Delta:

Required return = $r_f + \beta_a(r_m - r_f)$	13.1593
Excess return = (Expected return – Required return)	3.3907
Excess return / Standard deviation	0.4046

As the Excess return to Standard deviation is higher for the stock of Delta, Analyst should choose this stock.

[< TOP >](#)

Epsilon:

2. a. Required rate of return = $5.5 + 2(8) = 21.5\%$

Here, $g = ROE \times b = 0.2415 \times 0.8473 = 20.46\%$

b. Net Profit margin = $\frac{384.84}{924.54} = 41.63\%$

Return on equity = $\frac{384.84}{1593.25} = 24.15\%$

EPS = $\frac{384.84}{58.75} = \text{Rs. } 6.55$

Dividend pay out ratio = $\frac{1}{6.55} = 15.27\%$

Retention ratio = $1 - 0.1527 = 0.8473$

1. $P/E = \frac{(1-b)(1+g)}{K_e - g} = \frac{0.1527 \times 1.2046}{0.215 - 0.2046} = 17.68$

2. $P/B = \frac{ROE - g}{K_e - g} = \frac{0.2415 \times 0.2046}{0.2150 - 0.2046} = 3.55$

3. $P/S = \frac{NPM \times (1-b) \times (1+g)}{K_e - g} = \frac{0.4163 \times 0.1527 \times 1.2046}{0.2150 - 0.2046} = 7.36$

- c.
1. The calculated P/E is more than the current P/E, Therefore as per P/E stock is undervalued.
 2. The calculated P/B is less than the current P/B, Therefore as per P/B stock is slightly overvalued.
 3. The calculated P/S is greater than the current P/S, Therefore as per P/S stock is undervalued.

[< TOP >](#)

3. YTM to be found out by solving any of the bond by trial and error method. Therefore YTM=12%

a. Duration of outflows:

(1)	(2)	(3)	(4)	(5)	(6)
2	1,20,000	0.7972	95,664	0.2477	0.4954
3	1,20,000	0.7118	85,416	0.2212	0.6635
4	1,20,000	0.6355	76,260	0.1975	0.7898
5	1,20,000	0.5674	68,088	0.1763	0.8815
6	1,20,000	0.5066	60,792	0.1574	0.9444
			3,86,220		3.7746

- Duration of bond A:

As it is zero coupon bond, its duration is equal to years to maturity = 6 years.

- Duration of Bond B:

YTM is ' r_d ' in the following:

$$90PVIFA_{r_d,4} + 1000PVIF_{r_d,4} = 908.857$$

$$\therefore r_d = 12\%$$

$$r_c = \text{Current yield} = \frac{90}{908.86} = 0.0990$$

$$\text{Duration} = \frac{r_c}{r_d} PVIFA_{r_d,n} (1 + r_d) + \left[1 - \frac{r_c}{r_d}\right] n$$

$$= \frac{0.0990}{0.12} PVIFA_{(12,4)} (1.12) + \left[1 - \frac{0.0990}{0.12}\right] \times 4$$

$$= 3.5065 \text{ years}$$

To immunize the payments, duration of investment = Duration of liabilities

Let proportion of funds to be invested in bond A be X. Then, the distribution of investment

$$= 6(X) + 3.5065(1 - X)$$

As duration of investment = Duration of liabilities

$$6X + 3.5065 - 3.5065X = 3.7746$$

$$X = 10.75\% \text{ and } 1 - X = 89.25\%$$

Proportion of fund in Bond A = 10.75% and Bond B = 89.25%.

- b. Bond A:

Duration = 6 years

$$IE = D \times \frac{K_d}{1 + K_d}$$

$$IE = 6 \times \frac{0.12}{1.12} = -0.6429$$

$$\text{Interest rate risk} = \left\{ \frac{\Delta p_0}{p_0} \right\} = IE_{it} \left\{ \frac{\Delta YTM}{YTM} \right\} = -0.6429 \times \frac{0.01}{0.12} = 3.358\%$$

Bond B:

Duration = 3.5065 years

$$IE = 3.5065 \times \frac{0.12}{1.12} = -0.3757$$

$$\text{Interest rate risk} = 0.3757 \times \frac{0.01}{0.12} = 3.131\%$$

- b. Proportion of investment recommended in (a) will be giving perfect immunization only if the following

assumptions hold good:

- i. There is no default risk of the bonds.
- ii. The buy and hold strategy is adopted by the investor.
- iii. There is no instantaneous change in interest rate during the investment horizon.
- iv. The term structure is flat.

[< TOP >](#)

4. Total premium paid on purchasing a call and put option

$$= (3250)(1.05) + (0.7)(3250)$$

$$= 3412.50 + 2275 = \text{Rs. } 5687.50$$

- a. In this case, Mr. Madhavan kutty exercises neither the call option nor the put option as both will result in a loss for him.

$$\text{Ending value} = \text{Rs. } -5687.50 + \text{Zero gain}$$

$$= \text{Rs. } -5687.50$$

i.e. Net loss = Rs. 5687.50

- b. Since the price of the stock is below the exercise price of the call, the call will not be exercised. Only Put is valuable and is exercised.

$$\text{Total premium paid} = \text{Rs. } 5687.50$$

$$\text{Ending value} = - \text{Rs. } 5687.50 + \text{Rs. } [(85.00 - 80.20)(3250)]$$

$$= - \text{Rs. } 5687.50 + \text{Rs. } 15600$$

Therefore, Net Gain = Rs. 9912.50.

- c. In this situation, the put is worthless, since the price of the stock exceeds the put's exercise price. Only call option is valuable and is exercised.

$$\text{Total premium paid} = \text{Rs. } 5687.50$$

$$\text{Ending value} = - \text{Rs. } 5687.50 + \text{Rs. } [(95.20 - 95.00)(3250)]$$

$$= - \text{Rs. } 5037.50$$

Therefore Net loss = - Rs. 5037.50

[< TOP >](#)

5. a.

Year	Expected annual PLR	Loading (%)	Coupon rate (%)
2005-06	10.25%	0.5%	10.75
2006-07	$[(1.1005)^2 \div 1.1025] - 1 = 9.85\%$	0.5%	10.35
2007-08	$[(1.098)^3 \div (1.1005)^2] - 1 = 9.3\%$	0.5%	9.8
2008-09	$[(1.096)^4 \div (1.098)^3] - 1 = 9\%$	0.5%	9.5
2009-10	$[(1.095)^5 \div (1.096)^4] - 1 = 9.1\%$	0.5%	9.6

b.

Year	Coupon	Tax on coupon @ 30%	Post-tax Cash flow
2005-06	107.5	32.25	75.25
2006-07	103.5	31.05	72.45
2007-08	98	29.40	68.60
2008-09	95	28.50	66.5
2009-10	96	28.80	67.2

Now, Post-tax YTM for Infrastructure Development Corporation:

$$983 = \frac{75.25}{(1+K)} + \frac{72.45}{(1+K)^2} + \frac{68.60}{(1+K)^3} + \frac{66.50}{(1+K)^4} + \frac{1067.20}{(1+K)^5}$$

Solving, by trial and error we get Post-tax YTM = 7.47%

- c. Tax benefit on invested amount = 5000(15%) = Rs. 750

Maturity amount = 6630

Therefore, Actual investment amount = 5000 – 750 = 4250

$$\therefore 4250(1+YTM)^5 = 6630$$

$$\therefore YTM = 9.3\%$$

- d. While investing in the bond, one should bear in mind that investing in a bond exposes to price risk and interest rate risk. The interest rate may change which will affect the YTM. The bond's price may quote at discount to face value which exposes one to price risk.

When we compare the YTM, IDBI Flexi bond scores higher. So in the above investment alternatives, IDBI Flexi bond is the better alternative.

[< TOP >](#)

6.

End of month	Return from HOEC Ltd. (%)
August 2004	
September 2004	-1.196
October 2004	2.739
November 2004	14.693
December 2004	-4.000
January 2005	1.464
February 2005	5.716
March 2005	11.234
April 2005	37.235
May 2005	9.766
June 2005	21.961
July 2005	-4.829

Standard deviation of the return of HOEC Ltd. stock	12.54%
Mean of return	8.617%

Probability that the return will be between zero and 5% can be calculated as follows:

$$P\left(\frac{0 - (8.617)}{12.54} < Z < \frac{5 - (8.617)}{12.54}\right)$$

$$P\left(\frac{-8.617}{12.54} < Z < \frac{-3.617}{12.54}\right)$$

$$P(-0.6872 < Z < -0.2884)$$

From the normal distribution table, the area for

$$P(Z < -0.6872) = 0.2460$$

$$P(Z < -0.2884) = 0.3865$$

$$P(-0.6872 < Z < -0.2884) = 0.3865 - 0.2460 = 14.05\%$$

[< TOP >](#)

Section C: Applied Theory

7. The various behavior of investors and security analysts are as under

Investors

Investors often do not participate in asset and security categories: Investors invest only in stocks that are in limelight. Non-participation may also be related to the extent of familiarity or “mere exposure” effects; for example, a perception that what is familiar is more attractive and less risky. Even now, many investors entirely neglect major asset classes (such as commodities, stocks, bonds, real estate) and omit many individual securities within each class. Investors are strongly biased towards home country stocks.

Individual Investors Exhibit loss-averse Behavior: Owing to limited attention and mental processing power, individuals engage in mental accounting, which can lead them to confuse the unpleasantness of experiencing an economic loss with the unpleasantness of realizing the loss. This is related to the notion of loss-aversion in which individuals are concerned about gains and losses as measured relative to an arbitrary reference point. Investors are more prone to realizing gains than losses. Specifically, the individual investors trading through a large discount brokerage firm tend to be more likely to sell their winners than their losers.

Investors use past Performance as an Indicator of Future Performance in Mutual Fund and Stock Purchase Decisions: Representativeness (a tendency to judge likelihoods based upon naïve comparison of characteristics of the event being predicted with characteristics of the observed sample) suggests that investors will sometimes extrapolate past price trends naively. Evidence suggests that investors are naively extrapolating past mutual fund success, when empirical evidence flows are concentrated among the top performing mutual funds in each category is potentially consistent with limited attention/salience effects.

Investors Trade too aggressively: It has been argued that the volume of trade in speculative markets is too large, and overconfidence of traders has been advanced as an explanation. Whether volume is too large or not is hard to establish without benchmark rational level of volume is too large or not is hard to establish without a benchmark rational level of volume. Rational dynamic hedging strategies, in principle, can generate enormous volume with moderate amounts of news. Stronger support for overconfidence is provided by evidence suggesting that more active investors earn lower returns as result of incurring higher transaction costs.

Investors do not always form Efficient Portfolios: More generally, there is evidence that investors sometimes fail to form efficient portfolios. Several experimental studies examined portfolio allocation when there are two risky assets and a risk-free asset and returns are distributed normally. People often invest in inefficient portfolios that violate two-fund separation.

Certain Classes of Investors and their Agents Change their Behaviors in Parallel, This phenomenon, called herding, is consistent with rational responses to new information, agency problems or conformity bias. Herding behavior has been documented in the trading decisions of institutional investors in recommendation decisions of stock analysts. Investors may form theories of how the market works based upon irrelevant historical values and make decisions based upon mental accounting with respect to arbitrary reference points.

Security Analysts

Analyst forecasts and recommendations are biased. Analyst forecasts and recommendations have investment value. Nevertheless, there is strong evidence that analysts are biased in their forecasts and recommendations. It is likely that agency problems, analyst misconceptions and investor gullibility play a role in generating biases. Forecasts are generally optimistic especially at 12-month and longer time horizons, both in the US and other countries.

Analyst Forecast Errors are Predictable Based upon Past Accruals, Past Forecast Revisions and other Accounting Value Indicators: The presence of systematic bias suggests inefficient forecasts and predictable forecast errors. Past accounting accruals, the adjustments firms make for cash flows to obtain reported earnings, predict forecast errors for new issue firms and more generally in firms where earnings have been managed upward by taking high accruals. Analysts' over optimism about new issue firms, therefore, contributes to the new issue anomaly. These findings suggest that investors are excessively credulous about the motives of management, perhaps because of limited attention. It is not clear in general whether analysts under react or overreact to information.

[< TOP >](#)

8. The following factors must be considered prior to integration of the market:

- Advanced technology, telecommunication along with common language, legal system.
- The home country's stock exchange should be in a position to compete with the international stock exchange, in terms of risk management, listing rules, membership rules, trading and settlement mechanism etc.
- Integration of stock exchange in the home country take priority over regional integration
- Harmonization of accounting policies.
- Prior to regional integration, governments should liberalize their economic laws, such as removal of trade barriers, capital accounts convertibility, etc.

The main benefit of integrating stock markets is the availability of broad market for trading i.e., investors can buy and sell shares in each market without restriction. Identical securities can be issued, redeemed and traded in all markets in the region.

- An efficient secondary market can facilitate mobilization of capital in primary markets. Integration of stock markets can provide more efficient, liquid, and transparent trading and settlement systems.
- Integration can create the platform for large foreign portfolio investments flow which can result in better corporate governance by raising the level of information disclosure and reporting to match internationally acceptable standards.
- Integration can provide better hedging tools to companies that can improve the risk management system.
- It encourages the institutional investors in the home country.
- It can provide the best platform for privatization of large companies.
- Integration provides low transaction cost for investors. Examples include brokerage cost as a result of economies of scale due to efficient utilization of technology and sharing of costs among several markets.
- Regional integration can enhance market capitalization to the level of developed market and further increase the interest of foreign players in the region.

There are various factors that act as barriers to integration of stock exchanges. These barriers are summarized below:

- Capital market segmentation can arise due to price differences in two different markets. It can provide huge pricing anomalies on exchanges, because it will prevent the laws of supply and demand from interacting fully across national frontiers.
- Investments abroad include stock return and foreign exchange return. Fluctuations in exchange rates can create barriers to integration of the exchanges.
- Capital account convertibility is another barrier; capital control can create arbitrage opportunity in the market.
- Different accounting policies, regulatory systems, information systems and tax regimes are also barriers in some markets.
- Different time zones, different trading systems and their clearing and settlement systems are also big barriers.
- Poor capital market development resulting in low turnover, liquidity and size are also barriers in some markets.
- Updating of technology also affects the consolidation process. For examples, an electronic stock exchange will find it difficult to merge with one that has no electronic system.
- Some market barriers result from the market structure or dynamics that government action may not readily or perhaps appropriately change.

[< TOP >](#)

[< TOP OF THE DOCUMENT >](#)