

Question Paper

Security Analysis – I (211) : October 2002

Part A : Basic Concepts (30 Points)

- This part consists of questions with serial number 1 - 30.
- Answer **all** questions.
- Each question carries one point.
- Maximum time for answering Part A is 30 Minutes.

1. Which of the following statements is/are **true**?
 - I. Money market is the market for short term funds while capital market is the market for long term funds
 - II. Primary market is the market for new issues while the secondary market is for buying and selling of instruments after issue
 - III. Money market and capital market are parts of the financial market
 - a. Only (I) above
 - b. Only (II) above
 - c. Only (III) above
 - d. Both (I) and (II) above
 - e. All of (I), (II) and (III) above.
2. Which of the following statements is **true**?
 - a. If market price = face value, then coupon rate > YTM > current yield
 - b. If market price = face value, then coupon rate < current yield < YTM
 - c. If market price < face value, then coupon rate > current yield > YTM
 - d. If market price < face value, then coupon rate = current yield = YTM
 - e. If market price > face value, then coupon rate > current yield > YTM.
3. Which of the following statements regarding the characteristic line is/are **true**?
 - I. It represents the average or normal trade off between risk and return for a group of securities
 - II. The slope of the line is the beta of the stock
 - III. The intercept alpha represents the difference between the actual return and the normal return for their risk.
 - a. Only (I) above
 - b. Only (II) above
 - c. Only (III) above
 - d. Both (I) and (II) above
 - e. All of (I), (II) and (III) above.
4. If the modified duration of a bond is 3 years, yield to maturity of the bond is 16% and coupon is payable quarterly, the Macaulay's duration of the bond is
 - a. 2.59 years
 - b. 2.88 years
 - c. 3.12 years
 - d. 3.29 years
 - e. 3.48 years.

5. The ex-post SML for a pharmaceutical company is given by the equation

$$N(\bar{r}_i) = 8 + \beta_i 8$$

If beta of the company's security is 1.5 and actual return on the security is 18%, the security's ex-post alpha (α) is

- 4.0%
 - 2.0%
 - +1.5%
 - +2.0%
 - +8.0%
6. Which of the following statements is/are **true**?
- A bond's price moves inversely proportional to its yield to maturity
 - The percentage price change due to a change in yield to maturity increases at a diminishing rate as bond's maturity time decreases
 - Given the maturity, the change in bond price will be greater with a decrease in bond's YTM than the change in bond price with an equal increase in the bond's YTM.
- Only (I) above
 - Only (II) above
 - Both (I) and (II) above
 - Both (I) and (III) above
 - All (I), (II) and (III) above.
7. Consider the following information:

	Return	Variance	Weight in the portfolio
Stock ABC	16%	484(%) ²	0.5
Stock XYZ	13%	256(%) ²	0.5

If the variance of the portfolio is 132(%)², the co-efficient of correlation between the stocks is

- 0.68
 - 0.60
 - 0.30
 - 0.02
 - +0.30
8. Assume that 3-year bonds are yielding 12% and 5-year bonds are yielding 13%. The implied yield of 2-year bond after 3 years from now is
- 10.52%
 - 14.52%
 - 15.13%
 - 15.57%
 - 16.25%.
9. If investors expect the inflation rate to fall, which of following is/are the consequences?
- The slope of the SML would decrease
 - The required return on an average stock would decrease
 - The market risk premium would decrease
- Only (I) above
 - Only (II) above
 - Only (III) above
 - Both (I) and (III) above
 - All (I), (II) and (III) above.

10. Consider a bond with the following features:
 $P_0 = \text{Rs.}1000$; $C = 10\%$ p.a.; $\text{YTM} = 10\%$; Duration = 6.76 years.
 If YTM changes to 9% in alignment of prevailing interest rate, the price of the bond would change to
- Rs.1067.60
 - Rs.1061.50
 - Rs.1048.70
 - Rs. 951.30
 - Rs. 938.50
11. The holding period return for a stock is equal to
- The real yield minus the inflation rate
 - The dividend yield plus the capital gains yield
 - The capital gains yield minus the tax rate
 - The capital gains yield minus the dividend yield
 - The nominal yield minus the real yield.
12. Which of the following is/are **true** regarding liquidity premium theory of the term structure of interest rates?
- Forward rates are higher than the expected future rates
 - As the maturity increases, the risk premium increases but at a decreasing rate
 - The theory ignored the possibility that the actual returns may deviate from the returns expected.
- Only (I) above
 - Only (II) above
 - Only (III) above
 - Both (I) and (II) above
 - Both (II) and (III) above.
13. The beta of stock ABC is 0.64. If the ratio of standard deviation of market returns to standard deviation of stock returns is 0.75, the correlation coefficient of return on stock ABC with market return is
- 0.23
 - 0.31
 - 0.36
 - 0.48
 - 0.85
14. Which of the following is/are **true** regarding the semi-strong form of efficient market?
- All historical and publicly available information will be instantly discounted by the market
 - All the insider information will be discounted by the market instantly
 - Runs test is applied to test the semi-strong form of efficient market
 - Both (a) and (c) above
 - All (a), (b) and (c) above.
15. Which of the following statement(s) is/are **true** in the context of fundamental analysis?
- Fundamental analysis is an approach to predict the price of a security
 - Fundamental analysts view investments as short term decisions
 - One of the end objectives of fundamental analysis is to avoid the risk of loss from buying an overpriced security and selling an underpriced security.
- Only (I) above
 - Only (III) above
 - Both (I) and (II) above
 - Both (II) and (III) above
 - None of the above.

16. Which of the following statements is/are **not true**?
- I. The formation of head and shoulder pattern indicates the onset of the bull market
 - II. A rise in a momentum index signals the end of a bear market
 - III. The formation of rectangles confirm a reversal.
- a. Only (I) above
 - b. Only (II) above
 - c. Only (III) above
 - d. Both (I) and (II) above
 - e. Both (I) and (III) above.
17. In which of the following situations exit barriers are considered to be high?
- a. When the economies of scale are high
 - b. When the assets are highly specialized
 - c. When the fixed costs of exit are low
 - d. When the capital requirements are high
 - e. When the industry growth is low.
18. Which of the following principles is/are **true** while analyzing trend line penetrations?
- a. The lesser the number of peaks/troughs that touch a trendline, the greater its significance
 - b. The breadth of a trendline indicates whether a penetration is significant or not
 - c. A steep trendline is easily violated by small sideward movements in the price chart, and is not particularly useful in identifying reversals.
 - d. Penetration of a steep trendline is an indication of a reversal
 - e. Both (c) and (d) above.
19. Which of the following forecasting methods has limited relevance in a planned economy?
- a. Econometric model building approach
 - b. Lead indicator approach
 - c. GNP model building approach
 - d. Diffusion indices approach
 - e. None of the above.

20. Consider the data given below:

Day	Closing price (Rs.)
1	58.00
2	62.00
3	68.00
4	72.00
5	76.00
6	69.00

The 5-day weighted moving average on the 6th day is

- a. Rs.69.4
- b. Rs.69.9
- c. Rs.70.3
- d. Rs.70.9
- e. Rs.81.0

21. Consider the following information of Biotech India Ltd. for the year 2001-2002:

Profit after tax	Rs.50,00,000
Preference dividends	Rs. 5,00,000
Equity shares	5,00,000
DPS	Rs.3

The dividend cover of the company is

- a. 3.67
 - b. 3.33
 - c. 3.00
 - d. 0.33
 - e. 0.30
22. An option trader writes a single naked put option for a premium of Rs.5 per share. The option contract is on 100 shares. If the stock price and exercise price are Rs.90 and Rs.98 respectively, the initial margin to be deposited by the trader at the brokerage firm is
- a. Rs.1,400
 - b. Rs.1,800
 - c. Rs.2,300
 - d. Rs.2,400
 - e. Rs.2,460
23. Which of the following is most desirable considering the view point of the industry profits?
- a. High entry barriers and high exit barriers
 - b. High entry barriers and low exit barriers
 - c. Low entry barriers and low exit barriers
 - d. Low entry barriers and high exit barriers
 - e. None of the above.
24. Nifty futures that mature in three months from now are trading at 1008 while the Nifty is at 1020. The basis is
- a. -16
 - b. -10
 - c. -12
 - d. +12
 - e. +10
25. In which of the following situations, the company profits are inflated?
- 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.
26. A convertible bond with a face value Rs.1,000 had been issued at Rs.1,200 with a coupon rate of 10%. The conversion rate is 20 shares per bond. The current market price of the bond is Rs.1,300 and that of stock is Rs.55. The premium over conversion value is
- a. 9.09%
 - b. 18.18%
 - c. 20.00%
 - d. 23.15%
 - e. 30.00%.

27. M/s Best Electronics have been experiencing a 4% p.a. decline in its dividend growth rate for the last 3 years. The rate of return expected by the investors is 17%. If the earnings per share for the year 2001-2002 was Rs.8, dividend payout ratio is 40% and if the situation continues, the present intrinsic value of the share will be
- Rs.14.60
 - Rs.15.20
 - Rs.23.60
 - Rs.25.60
 - Rs.36.50
28. Which of the following factors have a bearing on the value of real assets?
- Physical characteristics viz the size, age and quality
 - Location
 - Legal environment
 - Both (a) and (b) above
 - All (a), (b) and (c) above.
29. Which of the following is/are **true** according to H-model?
- According to the model, if the current growth rate is lower than the normal long run growth rate, the growth rate eventually decreases
 - It is assumed that at H years the growth rate is exactly half-way between the abnormal growth rate and the normal growth rate
 - The intrinsic value of a share according to the model is equal to the value based on the normal growth rate plus premium due to abnormal growth rate.
- Only (I) above
 - Only (II) above
 - Both (I) and (II) above
 - Both (II) and (III) above
 - All (I), (II) and (III) above.
30. Consider the following data of GM Mutual Fund (Income plan):

	Rs. in crores
Value of investments	868.55
Receivables	65.15
Accrued income	43.40
Other current assets	260.57
Liabilities	195.43
Accrued expenses	43.40

If the number of outstanding units are 70 crores, the NAV per unit is

- Rs.12.41
- Rs.14.27
- Rs.14.89
- Rs.17.68
- Rs.21.09.

END OF PART A

Part B : Problems (50 Points)

- This part consists of questions with serial number 1 – 5.
- Answer **all** questions.
- Points are indicated against each question.
- Detailed workings should form part of your answer.
- Do not spend more than 110 - 120 minutes on Part B.

1. An analyst feels that Indian stock market has exhibited weak form of market efficiency. In order to test the efficiency he has collected data relating to the movement of Nifty for 20 trading days.

Date	Open	High	Low	Close
22-July-2002	1035.20	1035.20	1009.00	1012.00
23-July-2002	1012.05	1023.65	1005.75	1021.90
24-July-2002	1021.80	1022.20	1001.90	1004.05
25-July-2002	1004.20	1021.30	997.85	1001.55
26-July-2002	1001.05	1001.05	972.55	973.50
29-July-2002	973.00	977.95	953.15	971.65
30-July-2002	973.00	987.50	956.80	960.65
31-July-2002	960.30	964.10	943.60	958.90
01-Aug-2002	959.20	972.05	954.15	957.70
02-Aug-2002	957.55	957.55	935.55	954.75
05-Aug-2002	954.90	966.50	953.90	963.25
06-Aug-2002	963.30	969.55	955.40	966.65
07-Aug-2002	967.70	978.60	966.55	969.10
08-Aug-2002	969.15	971.75	951.20	953.55
09-Aug-2002	953.80	963.85	948.00	961.95
12-Aug-2002	961.15	971.55	961.15	969.85
13-Aug-2002	970.40	977.20	969.90	976.05
14-Aug-2002	976.05	976.25	967.25	969.65
16-Aug-2002	970.75	981.20	968.35	979.25
19-Aug-2002	979.40	983.55	978.20	979.85

You are **required** to test the weak form of efficient market hypothesis using auto correlation test, taking a time lag of 10 days.

(8 points)

2. The current EPS of Vinaya Enterprises Ltd. is Rs.4. The company has shown an extraordinary growth of 40% in its revenue and profits in the last few years. This high growth rate of 40% is likely to continue for the next 5 years after which growth rate in earnings will decline from 40% to 10% during the next 5 years and remain stable at 10% thereafter. The decline in the growth rate during the five year transition period will be equal and linear. Currently, the company's payout ratio is 10%. It is likely to remain the same for the next five years and from the beginning of the sixth year till the end of the 10th year, the payout ratio will linearly increase and stabilize at 50% at the end of the 10th year. The company's present beta is 1.75 and will remain the same for the next five years and from the sixth year the beta of the company's stock will decline linearly from 1.75 and stabilize at 1.10 at the end of 10th year. Assume the risk-free rate of return is 6.4% and risk premium of the market is 5.5%.

You are **required** to calculate the intrinsic value of the company's stock.

(12 points)

3. Given below is the distribution of conditional returns and explicit probability distribution of stocks of Excel Ltd. and Delux Ltd.

Probability	Conditional Returns	
	Excel	Delux
10%	50%	8%
20%	40%	18%
40%	30%	26%
20%	20%	36%
10%	10%	45%

You are **required** to

- Calculate the expected returns, standard deviations of returns for both the stocks and correlation coefficient between the stocks.
- Determine the expected rate of return of a zero-risk portfolio consisting of the above stocks.

(6 + 5 = 11 points)

4. Mrs. Veena Pillai is holding two bonds A and B which pay an annual coupon of 5% and 7% and their terms to maturity are 4 years and 6 years, respectively. The face value and maturity value of the bonds is Rs.100. Spot rates prevailing in the market as indicated by the yield curve are:

Maturity (Years)	Spot rates
1	3.35%
2	3.50%
3	3.75%
4	4.15%
5	4.50%
6	4.75%

You are **required** to calculate

- Using the duration concept, the expected change in the prices of bonds A and B for a 0.50% change in yield to maturity.
- The one year holding period return on the bonds assuming that spot rates will fall in twelve month's time by 0.25%, across the maturity spectrum.

(10 + 2 = 12 points)

5. The closing values of Nifty during the last week of August and first week of September 2002 are given below:

Day	Closing Nifty Value
26-08-02	998.85
27-08-02	987.70
28-08-02	985.70
29-08-02	987.25
30-08-02	1010.60
02-09-02	1013.50
03-09-02	1001.10
04-09-02	1006.95
05-09-02	1008.60
06-09-02	995.20

You are **required** to

- Calculate the Relative Strength Index of the Nifty as on 6th September, 2002.
- Interpret the results obtained in (a) above.

(6 + 1 = 7 points)

END OF PART B

Part C : Applied Theory (20 Points)

- This part consists of questions with serial number 6 - 7.
- Answer **all** questions.
- Points are indicated against each question.
- Do not spend more than 25 -30 minutes on Part C.

6. Stock market indices are the basic tools which help in analyzing movements of stock markets and are useful indicators of a country's economic health. Discuss the factors that influence the constructions of an index. Also state the limitations of the indices.

(6 + 4 = 10 points)

7. Technical analysts confirm a price reaction by looking at the volume of shares traded. Discuss the principles to be borne in mind while studying the price-volume relationships.

(10 points)

END OF PART C

END OF QUESTION PAPER

Suggested Answers

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Part A : Basic Concepts

1. Answer : (e)

Reason : Financial markets are part of financial system. Financial markets consists of Money Market and Capital markets. Short term funds are raised and traded in money markets while long term funds are raised and traded in capital markets. Both money markets and capital markets are further divided into primary markets, where new issues are made and secondary markets, where instruments after issue are bought and sold. Hence, all statements, I, II and III are true.

2. Answer : (e)

Reason : If market price is more than face value, the coupon rate will be higher than the discount rate or the YTM. As current yield is coupon income/market value, when market value is more than the face value, the current yield will be lower than the coupon rate. Hence, when $MP > FV$, coupon rate $>$ Current yield $>$ YTM and the answer is (e).

When $MP = FV$, coupon rate should be equal to $YTM =$ current yield. Hence, (a) and (b) are incorrect. When $MP < FV$, coupon rate $<$ Current yield $<$ YTM. Hence, (c) and (d) are also incorrect.

3. Answer : (b)

Reason : Characteristic Line is the line of best fit between the actual observation of security returns and market returns whereas security market line represents the average of normal trade off between risk and return group of securities. Hence, statement I is not true. A characteristic line is represented by the equation $r_{it} = a_i + \beta_{imt}$, where r_{it} is the return on the security, r_{mt} is the return of the market index, β_i is the slope of the characteristic line. Hence, statement II is true. In the above equation, a_i is the intercept term which represents the average return on the security when the market index return is zero. Hence, statement III is not true. Hence the answer is (b).

4. Answer : (c)

Reason : Modified duration =
$$\frac{\text{Macaulay's duration}}{1 + \frac{ytm}{f}}$$

Where f is the number of times compounding is done in a year,

In the given case,

$$3 = \frac{D}{1 + \frac{0.16}{4}}$$

$$\Rightarrow D = 3(1.04) = 3.12 \text{ years.}$$

5. Answer : (b)

Reason : In the ex-post SML, average historical rates of return for securities are plotted against their betas for a particular time period.

Ex-post SML is given by the equation –

$$N(\bar{r}_i) = r_o + r_i \beta_{im}, \text{ where}$$

r_o = intercept of ex-post SML and

r_i = slope of SML

Alpha, α_i , the securities abnormal return, is calculated as

$$\alpha_i = \bar{r}_i - N(\bar{r}_i), \text{ where } r_i \text{ is the actual return and } N(\bar{r}_i) \text{ is the required return according to SML. In the given case } N(\bar{r}_i) = 8 + 1.5 \times 8 = 20\%.$$

As actual return is 18%, alpha α_i is $18\% - 20\% = -2\%$.

6. Answer : (d)

Reason : According to the bond valuation concept, a bond's price increases with a decrease in ytm and vice-versa. Hence, (I) is true. For equal fixed increases and decreases in the ytm, price movements are not symmetrical. For a given maturity, the bond price changes more with a decrease in ytm than the change in bond price with an equal increase in ytm. Hence, (III) is true and the answer is (d).

As maturity time increases, the percentage price change due to a change in ytm increases at a diminishing rate. Hence, (II) is not true.

7. Answer : (c)

Reason : Variance of the portfolio of two stocks is calculated as

$$\sigma_1^2 w_1^2 + \sigma_2^2 w_2^2 + 2\sigma_1\sigma_2 \rho_{12} w_1 w_2, \text{ where}$$

σ_i is variance of the stock

w_i is weight of the stock

ρ_{ij} is the correlation coefficient of two stocks,

In the given case,

$$484 \times 0.5^2 + 256 \times 0.5^2 + 2 \times \sqrt{484} \sqrt{256} \rho_{12} 0.5 \times 0.5 = 132$$

$$= 121 + 64 + 176 \rho_{12} = 132$$

$$\rho_{12} = \frac{132 - 121 - 64}{176} = -0.3$$

8. Answer : (b)

Reason : According to the price expectations theory,

$$1 + r_n = [(1 + r_1)(1 + f_2) \dots (1 + f_n)]^{1/n}$$

Where r_n = Current spot rate for n year bond

f_n = Expected spot rate.

In the given case,

$$(1 + 0.13) = [(1 + 0.12)^3 (1 + f)^2]^{1/5}$$

$$(1 + f)^2 = \frac{(1.13)^5}{(1.12)^3} = 1.3114$$

$$f = \sqrt{1.3114} - 1 = 14.52\%.$$

9. Answer : (b)

Reason : The security market line is represented by the equation $R(r_i) = [E(r_m) - r_f] \beta_{im} + r_f$, where, $R(r_i)$ is the required return, r_f = risk free interest rate, $E(r_m) - r_f$ = slope of the line SML. Risk-free rate of return consists of real risk-free rate of interest + inflation rate. The slope of the line represents the market risk premium and is the function of risk aversion of the investors. Thus, when the inflation rate falls or rises risk-free rate of return and required return on the average stock will decrease or increase. Hence, statement II is true. The slope of the SML or the market premium changes with the investors perception of risk. Hence, the statements I and III are not true and the answer is (b).

10. Answer : (b)

$$\text{Reason : } \frac{\Delta P_0}{P_0} = -I E_{it} \frac{\Delta ytm}{ytm}$$

$$= -D_{it} \frac{\cancel{ytm}}{1 + ytm} \times \frac{\Delta ytm}{\cancel{ytm}} = -6.76 \times \frac{-0.01}{1.1} = 0.0615$$

$$\Delta P_0 = 0.0615 \times 1,000 = 61.50$$

$$\text{Changed Price} = P_0 + \Delta P_0 = 1,000 + 61.50 = \text{Rs.}1061.50.$$

11. Answer : (b)

Reason : Return of a particular security for a holding period is given by $\frac{(P_1 - P_0) + D_1}{P_0}$

Whereas P_0 = the beginning price of the security

P_1 = the end-of-period price

D_1 = the amount of dividends paid in period 1.

$\frac{D_1}{P_0}$ represents the dividend yield of the security and $\frac{P_1 - P_0}{P_0}$ represents the capital yield of the security.

Hence, the holding period return for a stock is equal to the dividend yield + the capital gain yield and the answer is (b).

12. Answer : (d)

Reason : According to liquidity premium theory, the investors are not indifferent to risk and they charge higher rates than the expected future rates. Hence (I) is true. The investors realize that the prices of bonds with longer maturity are more sensitive to the interest rate changes and the liquidity premium they charge is actually the risk premium. The extent of the premium increases as does the maturity but at a decreasing rate. Hence (II) is also true and the answer is (d). The shortcoming of the pure expectations theory is that, it assumes that the investors will act only on the basis of expected returns on bonds of different maturities. It does not take into account the possibility that the actual returns may deviate from the returns expected. Liquidity premium theory by taking into account the risk premium considers the possibility that the actual returns may deviate from the expected returns.

13. Answer : (d)

Reason : Beta of a stock, $\beta_i = \frac{\text{Cov}_{im}}{\text{Var}_m} = r_{im} \frac{s_i}{s_m}$ where, ρ_{im} is the correlation coefficient of stock return with the market and σ_i/σ_m is the ratio of standard deviation of stock return to market return. In the given case,

$$0.64 = \frac{r_{ABC,m}}{0.75}$$

$$\begin{aligned} \Rightarrow \rho_{ABC,m} &= 0.64 \times 0.75 \\ &= 0.48. \end{aligned}$$

14. Answer : (a)

Reason : According to semi-strong form, current stock price reflect all publicity available information such as earnings, stock and cash dividends, splits, mergers and takeovers, interest rate changes, etc. It also says that prices adjust to such information 'quickly and accurately' so abnormal/superior profits on a consistent basis cannot be earned. Hence, (a) is true. According to the strong form, prices of securities fully reflect all available information – both public and private. That is, if this form is true, prices reflect the information that is available to only select groups. Hence, (b) is incorrect. Runs test is applied to test weak form of efficiency. Hence, (c) is also incorrect.

15. Answer : (b)

Reason : Fundamental analysis determines the intrinsic value of a security, whereas technical analysis with the help of the price charts predicts the price of a security. Hence Statement I is not true. Fundamental analysis view the investments as long term decisions. Hence, statement II is not true. One of the end objectives of fundamental analysis is to avoid the risk of loss from buying an overpriced security and selling an underpriced security. Hence, the statement (III) is true and the answer is (b).

16. Answer : (e)

Reason : Head and Shoulders pattern is by far the most reliable, and widely used, of all reversal patterns. The left shoulder signifies the penultimate rally in the bull market. The right shoulder confirms the beginning of a bear market, as it fails to climb above the previous rally (the head). This pattern occurs at the end of a bull market and is characterized by two smaller rallies flanking a higher rally just as the head lies in between two shoulders. Hence, (I) is not true. A series of minor rallies and reactions, which have almost identical peaks and troughs signal the formation of a rectangle. A rectangle indicates equal pressure being exercised by buyers and sellers, and the combat is indecisive until a breakout occurs. The price line may breakout on either side. A rectangle therefore may be a consolidation pattern or result in reversal. Hence (III) is also not true and (e) is the answer. A diffusion index or momentum index is computed by calculating the rate at which a certain group of stocks change price over a given period of time. A rise in the index signals the onset of a bull market and vice versa. Hence, (II) is true.

17. Answer : (b)

Reason : If the assets of the industry are highly specialized, it is very difficult to dispose of the assets while closing down the business. Hence, the exit barriers are high when the assets of the industry are highly specialized.

When the economics of scale and capital requirements are high, entry barriers will be high and these have no impact on the exit barriers. Hence, (a) and (d) are not true. When the fixed costs of exit are low, exit barriers will be low. Hence, (c) is not true. When the industry growth is slow, the intensity of rivalry among existing competitors will be high. Hence, (e) is also not true.

18. Answer : (c)

Reason : A rising primary trend in prices, would be marked by a series of ascending rallies, while a falling trend would be characterized by a series of descending rallies. Trendlines are lines that are drawn to identify such trends and extend them into the future. A steep trendline is easily violated by small sideward movements in the price chart, and is not particularly useful in identifying reversals. Hence, (c) is true. The larger the number of peaks/troughs that touch a trendline, the greater its significance. When peaks of rallies reach the trendline, and return without penetration, the recurrence of this tendency indicates that the trend 'obeys' the trendline. Hence, (a) is incorrect. The length of a trendline indicates whether a penetration is significant. Longer the time span covered by a trendline, greater the importance of a violation. Hence, (b) is incorrect. Penetration of a steep trendline generally results in a corrective movement, after which the previous trend continues. Hence, (d) is incorrect.

19. Answer : (a)

Reason : Of the forecasting methods, Econometric model building approach has limited relevance in a planned economy.

20. Answer : (d)

Reason : 5-day weighted moving average on the 6th day is calculated as

$$\frac{69 \times 5 + 76 \times 4 + 72 \times 3 + 68 \times 2 + 62 \times 1}{15} = \text{Rs. } 70.9.$$

21. Answer : (c)

$$\begin{aligned} \text{Reason : Dividend cover} &= \frac{\text{EPS}}{\text{DPS}} \\ &= \frac{(\text{PAT} - \text{Preference Dividends}) / \text{Equity shares}}{\text{DPS}} \\ &= \frac{(50,00,000 - 5,00,000) / 5,00,000}{3} \\ &= \frac{9}{3} = 3. \end{aligned}$$

22. Answer : (c)

Reason : As the stated option is a put-option and as its exercise price is more than the stock price it is a 'in the money' option. For a naked put option, which is 'In the money', the margin is calculated as follows:

i. calculate the option premium for 100 shares;

ii. calculate 0.20 (Stock's market price) (100).

Then, the margin = (i) + (ii).

In the given case,

$$\text{Margin} = 5 \times 100 + 0.2 (90) \times 100 = \text{Rs.}2300.$$

23. Answer : (b)

Reason : The best case from the viewpoint of industry profits is one in which entry barriers are high but exit barriers are low. Here entry will be deterred, and unsuccessful competitors will leave the industry. When both entry and exit barriers are high, profit potential is high but is usually accompanied by more risk. Although entry is deterred, unsuccessful firms will stay and fight in the industry.

The case of low entry and exit barriers is merely unexciting, but the worst case is one in which entry barriers are low and exit barriers are high. Here entry is easy and will be attracted by upturns in economic conditions or other temporary windfalls. However, capacity will not leave the industry when results deteriorate. As a result capacity stacks up in the industry and profitability is usually chronically poor.

24. Answer : (d)

Reason : Basis is the difference between the current cash price and the futures price. In the given case,

$$\text{Basis} = 1020 - 1008 = +12.$$

25. Answer : (a)

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).

26. Answer : (b)

$$\text{Reason : Premium over conversion value} = \frac{\text{Bond price} - \text{Conversion value}}{\text{Conversion value}}$$

Where conversion value = Current market price of the stock $\times$ Conversion rate

$$\text{In the given case, conversion value} = 55 \times 20 = \text{Rs.}1,100$$

$$\text{Premium over conversion value} = \frac{1300 - 1100}{1100} = 18.18\%.$$

27. Answer : (a)

Reason : Intrinsic value according to dividend discount model $= \frac{D_0(1+g)}{k-g}$, where

D_0 = Current dividends

G = growth rate

K = required return by the shareholders.

In the given case,

$$\begin{aligned}\text{Value} &= \frac{(8 \times 0.4)(1 - 0.04)}{0.17 - (-0.04)} \\ &= \frac{3.072}{0.21} = \text{Rs.14.60 (approx.)}\end{aligned}$$

28. Answer : (e)

Reason : The qualitative factors which have a bearing on the value of real assets are business cycle, interest rates, populations demographics, legal environment, taste and preference for real assets, physical characteristics, location, etc. Hence (e) is the answer.

29. Answer : (d)

Reason : One of the assumptions of H model is that a company experiences abnormal growth rate and normal growth rate. In the long run the abnormal growth rate reaches the normal growth rate. This happens after $2H$ years and at H years, the growth rate is exactly half way between abnormal and normal growth rate. Hence, II is true.

Based on the assumptions, intrinsic value of the stock is given by $\frac{D_0(1+g_n)}{r-g_n} + \frac{D_0H(g_a-g_n)}{r-g_n}$,

where the first term represents the value based on the normal growth rate and the second term represents the premium due to abnormal growth rate. Hence, (III) is also true and the answer is (d).

As already said in the long run the abnormal growth rate reaches the normal growth rate i.e., if abnormal growth rate is more than the normal rate, the growth rate declines whereas if the abnormal growth rate is less than the normal rate, the growth rate increases. Hence, (I) is not true.

30. Answer : (b)

Reason : NAV

$$\begin{aligned}&= \frac{\text{Value of investments} + \text{Receivables} + \text{Accrued Income} + \text{other CA-Liabilities} - \text{Accrued Expenses}}{\text{Number of outstanding units}} \\ &= \frac{868.55 + 65.15 + 43.40 + 260.57 - 195.43 - 43.40}{70} \\ &= \frac{998.84}{70} = \text{Rs.14.27}.\end{aligned}$$

Part B : Problems (211)

1.

First 10 days closing Nifty value (A)	Next 10 days closing Nifty Value (B)	Change in A (X)	Change in B (Y)	X ²	Y ²	XY
1012.00	963.25	–	–			
1021.90	966.65	9.9	3.4	98.01	11.56	33.66
1004.05	969.10	-17.85	2.45	318.62	6.00	-43.73
1001.55	953.55	-2.5	-15.55	6.25	241.80	38.88
973.5	961.95	-28.05	8.4	786.80	70.56	-235.62
971.65	969.85	-1.85	7.9	3.42	62.41	-14.62
960.65	976.05	-11	6.2	121	38.44	-68.2
958.9	969.65	-1.75	-6.4	3.06	40.96	11.2
957.7	979.25	-1.2	9.6	1.44	92.16	-11.52
954.75	979.85	-2.95	0.6	8.70	0.36	-1.77
		-57.25	16.6	1347.31	564.25	-291.72

$$\bar{X} = \frac{-57.25}{9} = -6.361 \quad \Sigma X^2 = 1347.311 \quad \Sigma X = -57.25$$

$$\bar{Y} = \frac{16.6}{9} = 1.84 \quad \Sigma Y^2 = 564.251 \quad \Sigma Y = 16.6$$

$$\Sigma XY = -291.723$$

$$r^2 = \frac{a\Sigma Y + b\Sigma XY - n(\bar{Y})^2}{\Sigma Y^2 - n(\bar{Y})^2}$$

$$a = \bar{Y} - b\bar{X}$$

$$b = \frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma X^2 - n(\bar{X})^2}$$

$$= \frac{-291.72 - 9(-6.361)(1.84)}{1347.31 - 9(-6.361)^2}$$

$$= \frac{-186.38}{1347.31 - 364.16} = \frac{-186.38}{983.15}$$

$$= -0.1895$$

$$a = 1.84 - (-0.1895)(-6.361) = 0.6345$$

$$r^2 = \frac{0.6345 \times 16.6 + (-0.1895)(-291.723) - 9 \times (1.84)^2}{564.25 - 9 \times (1.84)^2}$$

$$= \frac{10.5327 + 55.2815 - 30.4704}{564.25 - 9 \times (1.84)^2}$$

$$\frac{35.3438}{533.7796} = 0.06621$$

$$r = 0.2573$$

Hence, there is a small degree of correlation between the returns of two periods and therefore we can conclude that index moved in a random manner.

2. Vinaya Enterprise Ltd. would be showing the following three stage of growth in the next 10 years.

- a. High-growth (0 to 5 year)
- b. Transition-period (5th to 10th year)
- c. Stable growth (10th year onwards)

Inputs for high growth phase

Growth rate = 40%

Beta during high – growth period 1.75

Divided payout rate = 10%

EPS = Rs.4.00

Cost of equity during the high growth period = $6.40 + 1.75 \times 5.50 = 16.025\%$.

Inputs for the Transition Period

Growth rate will be decline linearly from 40% to 10% in 5 year period i.e. each year growth rate will

$$\text{decline by} = \left(\frac{40\% - 10\%}{5} = \frac{30}{5} = 6\% \right)$$

Payout rate will increase linearly during this period from 10% to 50% i.e. each year it will increase by $\frac{50\% - 10\%}{5} = 8\%$.

Beta will drop linearly from 1.75 to 1.10 during the 5 year transition period.

Every year Beta will decline by $\frac{1.75 - 1.10}{5} = 0.13$.

As beta will be changing cost of equity will also change every year.

Cost of equity during 6th – 10th year

6 th year	=	$6.4 + 1.62 \times 5.5$	=	15.31%
7 th year	=	$6.4 + 1.49 \times 5.5$	=	14.60%
8 th year	=	$6.4 + 1.36 \times 5.5$	=	13.88%
9 th year	=	$6.4 + 1.23 \times 5.5$	=	13.17%
10 th year	=	$6.4 + 1.10 \times 5.5$	=	12.45%

Inputs for the stable growth rate

Growth rate = 10%

Beta = 1.10

Payout rate = 50%

Cost of Equity = $6.40 + 1.10 \times 5.50$
= 12.45%.

Using these inputs, we can calculate present value of dividends during the next 10 years.

Period	EPS	Payout	DPS	Cost of Equity
1	$4 \times (1.4) = 5.6$	10%	0.56	16.025%
2	$4 \times (1.4)^2 = 7.84$	10%	0.784	16.025%
3	$4 \times (1.4)^3 = 10.98$	10%	1.098	16.025%
4	$4 \times (1.4)^4 = 15.37$	10%	1.537	16.025%
5	$4 \times (1.4)^5 = 21.52$	10%	2.152	16.025%
6	$4 \times (1.4)^5 (1.34) = 28.84$	18%	5.19	15.31%
7	$4 \times (1.4)^5 \times (1.34) \times (1.28) = 36.91$	26%	9.60	14.60%
8	$4 \times (1.4)^5 \times (1.34) \times (1.28) \times (1.22) = 45.03$	34%	15.31	13.88%
9	$4 \times (1.4)^5 \times (1.34) \times (1.28) \times (1.22) \times (1.16) = 52.23$	42%	21.94	13.17%
10	$4 \times (1.4)^5 \times (1.34) \times (1.28) \times (1.22) (1.16) \times (1.10) = 57.45$	50%	28.73	12.45%

Present value of the dividends

$$\begin{aligned}
& \frac{0.56}{(1.16025)} + \frac{0.784}{(1.16025)^2} + \frac{1.098}{(1.16025)^3} + \frac{1.537}{(1.16025)^4} + \frac{2.152}{(1.16025)^5} + \frac{5.19}{(1.16025)^5 (1.1531)} + \\
& \frac{9.60}{(1.16025)^5 (1.1531)(1.146)} + \frac{15.31}{(1.16025)^5 (1.1531)(1.146)(1.1388)} + \\
& \frac{21.94}{(1.16025)^5 (1.1531)(1.146)(1.1388)(1.1317)} + \frac{28.73}{(1.16025)^5 (1.1531)(1.146)(1.138)(1.1317)(1.1245)} \\
& = 0.4826 + 0.5824 + 0.7029 + 0.8481 + 1.0235 + 2.1406 + 3.455 + 4.839 + 6.127 + 7.135 = 27.3361
\end{aligned}$$

Present value of stock price at the end of 10th year

$$\frac{28.73(1.10)}{(0.1245 - 0.10)} \times \frac{1}{(1.16025)^5 \times (1.1531) \times (1.146) \times (1.1388) \times (1.1317) \times (1.1245)} = 320.34.$$

Value of Vinaya's stock = 27.3361 + 320.34 = Rs.347.68.

3. Excel Stock

$R_{(EX)}$	P_i	$R_{EX} P_i$	$(R_{EX} - E_{(EX)})$	$P_i [(R_{EX} - E_{(EX)})]^2$
50%	0.10	5	20	40
40%	0.20	8	10	20
30%	0.40	12	0	0
20%	0.20	4	- 10	20
10%	0.10	1	- 20	40

$$\Sigma P_i R_{EX} = 30\%$$

$$P_i [(R_{EX} - E_{(EX)})]^2 = 120\%$$

$$E_{(EX)} = 30\%$$

$$\sigma_{EX} = \sqrt{120} = 10.95\%.$$

Delux Stock

$R_{(DE)}$	P_i	$R_{(DE)} P_i$	$(R_{(DE)} - E_{(DE)})$	$P_i (R_{(DE)} - E_{(DE)})^2$
8%	0.10	0.80	- 18.5	34.225
18%	0.20	3.6	- 8.5	14.45
26%	0.40	10.4	- 0.50	0.10
36%	0.20	7.2	9.5	18.05
45%	0.10	4.5	18.5	34.225

$$\Sigma P_i R_{(DE)} = 26.5\%$$

$$\Sigma P_i (R_{(DE)} - E_{(DE)})^2 = 101.05\%$$

$$E_{(DE)} = 26.5\%$$

$$\begin{aligned}
\sigma_{DE} &= \sqrt{101.05\%} \\
&= 10.052
\end{aligned}$$

Covariance between two stock

P _i	(R _{EX} - E _{EX})	(R _{DE} - E _{DE})	P _i (R _{EX} - E _{EX}) x (R _{DE} - E _{DE})
0.10	20	-18.5	-37
0.20	10	-8.5	-17
0.40	0	-0.50	0
0.20	-10	19.5	-19.0
0.10	-20	18.5	-37

$$\Sigma P_i (R_{EX} - E_{EX}) \times (R_{DE} - E_{DE})$$

$$COV_{(EX \& DE)} = -110$$

$$\begin{aligned} \text{Correlation coefficient} &= \frac{COV_{EXDE}}{\sigma_{EX} \sigma_{DE}} \\ &= \frac{-110}{10.95 \times 10.05} = -1 \end{aligned}$$

Since the correlation between two stocks is -1. A zero risk portfolio can be constructed using these stocks.

If W₁ and W₂ is proportion of investment in Excel and Delux stocks. The portfolio risk will be

$$b. \quad \sigma_p^2 = W_1^2 \sigma_1^2 + W_2^2 \sigma_2^2 + 2\rho_{12} \sigma_1 \sigma_2 W_1 W_2$$

$$\sigma_p^2 = W_1^2 \sigma_1^2 + W_2^2 \sigma_2^2 + 2(-1) \sigma_1 \sigma_2 W_1 W_2$$

$$\sigma_p = (W_1 \sigma_1 - W_2 \sigma_2)^2$$

$$\sigma_p = W_1 \sigma_1 - W_2 \sigma_2$$

$$0 = W_1 \sigma_1 - W_2 \sigma_2$$

$$W_1 \sigma_1 = W_2 \sigma_2 \quad (i)$$

$$\text{Again } W_1 + W_2 = 1$$

$$\text{or } W_2 = 1 - W_1 \quad (ii)$$

Putting the value of W₂ in equation (i)

$$W_1 \sigma_1 = (1 - W_1) \sigma_2$$

$$W_1 \sigma_{EX} = (1 - W_1) \sigma_{DE}$$

$$10.95 W_1 = (1 - W_1) 10.05$$

$$(10.95 + 10.05) W_1 = 10.05$$

$$W_1 = \frac{10.05}{(10.95 + 10.05)} = 47.86\%$$

$$W_2 = 1 - 0.4786 = 52.14\%$$

Expected return of risk free portfolio

$$= 0.4786 \times 30 + 0.5214 \times 26.5$$

$$= 14.358 + 13.82$$

$$= 28.18\%.$$

4.

$$P = \frac{5}{(1.0335)} + \frac{5}{(1.035)^2} + \frac{5}{(1.0375)^3} + \frac{105}{(1.0415)^4}$$

$$P = 4.84 + 4.67 + 4.48 + 89.24$$

$$= \text{Rs.}103.23$$

YTM of the bond A

$$103.23 = \frac{5}{(1+k)^1} + \frac{5}{(1+K)^2} + \frac{5}{(1+K)^3} + \frac{105}{(1+K)^5}$$

At K = 4%

LHS = 103.63

Hence YTM is approximately 4%.

Duration of Bond A

Year	C.F	P.v. of C.F at 4%	Year x P.V. of C.F
1	5	4.81	4.81
2	5	4.62	9.24
3	5	4.44	13.32
4	105	89.75	359.00
		103.62	386.37

$$\text{Duration} = \frac{386.37}{103.62} = 3.73 \text{ years}$$

$$\begin{aligned} \text{Modified duration} &= \frac{3.73}{1+.04} \\ &= 3.59 \text{ years} \end{aligned}$$

For a 0.50% increase in YTM change in the price of the bond A

$$\begin{aligned} \frac{\Delta P}{P} &= -3.59 \times 0.50 \\ &= -1.795\%. \end{aligned}$$

Price of the bond A will decrease by 1.795%.

Price of the bond B

$$\begin{aligned} P &= \frac{7}{(1.0335)^1} + \frac{7}{(1.035)^2} + \frac{7}{(1.0375)^3} + \frac{7}{(1.0415)^4} + \frac{7}{(1.045)^5} + \frac{107}{(1.0475)^6} \\ &= 6.773 + 6.535 + 6.268 + 5.95 + 5.617 + 80.995 = \text{Rs.}112.14 \end{aligned}$$

Yield to maturity of the bond B

$$112.14 = \frac{7}{(1+K)^1} + \frac{7}{(1+K)^2} + \frac{7}{(1+K)^3} + \frac{7}{(1+K)^4} + \frac{7}{(1+K)^5} + \frac{107}{(1+K)^6}$$

Or

$$112.14 = 7 \times \text{PVIFA}(K_1 6) + 100 \times \text{PVIF}(K_1 6)$$

$$\text{at } K = 5\%$$

$$\text{L.H.S.} = 110.15$$

$$\text{at } K = 4\%$$

$$\text{L.H.S} = 115.73.$$

$$\begin{aligned} \text{YTM} &= 4\% + \frac{(115.73-112.14)}{(115.73-110.15)} \\ &= 4\% + \frac{3.59}{5.58} \\ &= 4.64\%. \end{aligned}$$

Duration of the Bond B

Year	C.F	Present value of cash flow at (4.64%)	Year x PVCF
1	7	6.689	6.689
2	7	6.393	12.786
3	7	6.109	18.327
4	7	5.839	23.356
5	7	5.579	27.895
6	107	81.507	489.042
		112.12	578.095

$$\begin{aligned}\text{Duration} &= \frac{578.095}{112.12} \\ &= 5.156 \text{ years}\end{aligned}$$

$$\begin{aligned}\text{Modified duration} &= \frac{5.156}{1+.0464} \\ &= 4.927 \text{ years}\end{aligned}$$

$$\begin{aligned}\text{Change in the price of the bond} &= -4.927 \times 0.50 \\ &= -2.464\%\end{aligned}$$

Therefore, price of the bond B will decline by 2.464%.

- b. Price of the bonds after one year

Bond A

$$\begin{aligned}\frac{5}{(1.0310)^1} + \frac{5}{(1.0325)^2} + \frac{105}{(1.035)^3} \\ 4.85 + 4.69 + 94.70 = \text{Rs.}104.24\end{aligned}$$

$$\text{One year holding period return on bond A} = \frac{104.24 - 103.23 + 5}{103.23} = 5.82\%$$

Bond B

$$\begin{aligned}\frac{7}{(10.310)} + \frac{7}{(1.0325)^2} + \frac{7}{(1.0350)^3} + \frac{7}{(1.039)^4} + \frac{107}{(1.0425)^5} \\ = 6.789 + 6.566 + 6.314 + 6.00 + 86.896 = 112.565\end{aligned}$$

$$\text{One year holding period return} = \frac{112.565 - 112.14 + 7}{112.14} = 6.62\%$$

5. a.

Day	Closing Nifty value	Trend
1	998.85	–
2	987.70	Down (–)
3	985.70	Down (–)
4	987.25	Up (+)
5	1010.60	Up (+)
6	1013.50	Up (+)
7	1001.10	Down (–)
8	1006.95	Up (+)
9	1008.60	Up (+)
10	995.20	Down (–)

$$RSI = 100 - \frac{100}{1 + RS}$$

$$RS = \frac{\text{Average of up closing prices}}{\text{Average of down closing prices}}$$

$$= \left(\frac{\left(\frac{987.25 + 1010.60 + 1013.50 + 1006.95 + 1008.6}{5} \right)}{\left(\frac{987.70 + 985.70 + 1001.10 + 995.20}{4} \right)} \right)$$

$$= \frac{1005.38}{992.425} = 1.01305$$

$$RSI = 100 - \frac{100}{(1 + 1.01305)}$$

$$= 50.32$$

- b. As the value of RSI is near 50 it is an indication that the prevailing price is neither in overbought or over sold position.

Part C: Applied Theory

6. a. To ensure that an index number serves its objectives/purposes a careful attention must be given to the following factors that influence the construction of index numbers:
- i. selecting the shares for inclusion in the index-sampling;
 - ii. determining the relative importance of each share included in the sample weighting and
 - iii. averaging the included shares into a single measure.

Selecting Stocks for Inclusion

An index can be based on a sample of stocks or all of them. When the index is based on all listed shares, then the question of sampling does not arise. But, when the index is based on a sample (All principal share price index numbers in India are based on a sample of shares unlike the New York Stock Exchange (NYSE) Index in the US which is based on all stocks listed on Exchange) the utility of the index will depend upon the degree to which one can infer movements in excluded shares on the basis of movements in the included shares.

So, an index based on a sample will be the desired measure only when: (a) the shares of relatively few listed companies constitute a large proportion of the value of the shares of all listed companies; and (b) there is a tendency for all share prices to move together.

Determining the Relative Importance of the Share

To determine the relative importance of each included share in the overall index, we need to have a system of weighing the shares. The system of weighting is usually determined by the purpose for which the index number is constructed.

There are two popular ways of weighting the shares included in the sample: (a) assign weights based on the market values and (b) assign equal weights to equal relative price changes. When weights are assigned on market value basis, the index number is typically defined as follows:

$$\frac{\sum_{i=1}^N PR_{it} W_i}{\sum_{i=1}^N W_i} \times 100 \quad \dots\dots\dots (1)$$

where

PR_{it} = Price relative of share i in period t which is equal to $\frac{P_{it}}{P_{i0}}$ i.e. price of share i in period t divided by the price of the share in the base year.

W_i = Weight proportional to the market value of share i in the base year divided by market value of all shares of the sample during the base year.

N = Size of the sample.

When relative price changes are equally weighted, the index number is defined as

$$\frac{\sum_{i=1}^N PR_{it}}{N} \times 100 \quad \dots\dots\dots (2)$$

Where N denotes the size of the sample.

The method of weighing based on market values is appropriate for indicating changes in the aggregate market value of stocks, while the latter method is more appropriate for indicating price movements of typical stocks.

Methods of Averaging

Two kinds of averages are used in constructing share price indices – arithmetic mean and the geometric mean. Between the two averages, the arithmetic mean is more widely used. However, before we evaluate these methods, it must be emphasized that the indices based on averages are not the same as the averages.

b. **LIMITATIONS OF VARIOUS INDICES**

Though stock market indices are the basic tools to help and analyze the movements of price of the stock markets and is a useful indicator of a country's economic health, they have their own limitations also. The following points deal with those limitations:

- i. Whenever a company issues rights in the form of CDs (to be converted at a later stage) or other instruments (warrants) entitling the holder to acquire one equity share of the company at specified price at a notified future date, secured promissory notes (SPNs), etc., the equity capital increases only on conversion of debentures or the exercise of warrants/SPNs option for equity shares but the market adjusts the ex-rights price of the share immediately (on the day the share starts trading ex-rights) on the basis of the anticipated increased equity capital and likely reduced earnings per share, etc. Hence, some modification is needed to adjust the equity capital suitably in advance. But the exact procedure by which this can be done is very difficult to state since the internal market mechanism which adjusts the ex-rights share price is almost impossible to know precisely.
Again, this is a common limitation of all the indices and so far, the increased equity capital is considered only after the debentures are converted into shares and are acquired for warrants/SPNs and the new shares are listed for trading on the stock exchange.
- ii. The coverage (in terms of number of scrips, number of stock exchanges used and the respective weights assigned) is different for all the indices and hence, each index may give only a partial picture of the movement of prices or the state of the market presented may be misleading.
- iii. The financial institutions like ICICI, IDBI, LIC, GIC, etc., sometimes convert the loans extended by them to companies into equity shares at a specified date. This causes sudden and significant changes in the market capitalization and hence the weights assigned to those scrips change violently.

7. The following, in brief, are the principles to be borne in mind while studying Price-Volume relationships:

- i. A price rise that is accompanied by expanding volume is a normal market tendency and therefore is not indicative of any potential trend reversal.
- ii. A new high reached with a volume that is actually diminishing is a warning to a reversal in price.
- iii. A rally which reaches a new high would also be accompanied by a volume that is higher than that obtained at the preceding peak. If volumes obtained at a new high are lower, a trend reversal is indicated.
- iv. After a slow expansion over a period, sometimes both prices and volume work into an exponential rise. This is indicative of heavy off-loading by bulls and is called a 'speculative blow off' and marks the end of the bull market. Price and volumes both fall sharply after this development.
- v. When prices recover after a bearish phase and subsequently react to a level equal to or slightly above the previous low, if the volume accompanying such reaction is lower than that obtained at the previous low, a bullish trend is indicated. Lower volumes accompanying such reactions is indicative of the weakness of the reaction.
- vi. A reversal in trend indicated by a downside breakout from a price pattern, trendline or moving average, can be acted upon if accompanied by heavy volume, which confirms the bearish sign.
- vii. Termination of a bear market is often signalled by a 'selling climax'. A selling climax occurs when prices fall for a considerable time at an accelerated pace and are accompanied by expanding volume. Price may be expected to rise subsequently.
- viii. An accumulation in the course of a bearish market, accompanied by high volume, indicates persistent effort to push up prices, and would spark a bullish phase. Similarly, a distribution accompanied by increased volume is a bearish factor. However, where volumes do not increase at an accumulation or distribution, the indication is that there is only a consolidation of the prevailing trend.