Question Paper
Portfolio Management (CFA640) : October 2008

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 assumptions is common between Capital Asset Pricing Model and Arbitrage Pricing Theory? <Answer>

(a) A single period investment horizon
(b) The investors can freely borrow and lend at risk-free rates
(c) The investors select portfolios based on expected mean and variance of returns
(d) There are no taxes
(e) Investors have homogeneous expectations and are expected utility-of-wealth maximizers.

2. Mr. Arush is an anxious and careful investor. He approaches investment counsel for making investment and emphasizes on safety of capital. He instructs the investment counsel that the significant proportion of his investments should be devoted to government securities and guaranteed return investments. According to Bielard, Biehl and Kaiser five way model, Mr. Arush can be categorized as <Answer>

(a) Individualist
(b) Adventurer
(c) Celebrity
(d) Guardian
(e) Straight arrow.

3. Which of the following statements is **true** regarding formula plans in portfolio revision? <Answer>

(a) In dollar-cost-averaging, the investor must fix predetermined action points called revaluation points
(b) Variable ratio plan implies selling of stocks and buying of bonds as stock prices rise and the buying of stocks and selling of bonds as stock prices fall
(c) Dollar-cost-averaging works well over short periods
(d) Variable ratio plan requires less accurate forecasting than other plans and hence is less complicated
(e) The constant dollar value plan does not require forecast of the level to which stock prices may fall.

4. Mr. Goel, a trader, has created a long straddle strategy on the stock of Power Grid Corporation of India Ltd. (PGCL), using the following options: <Answer>

Stock	Options	Strike Price (Rs.)	Premium (Rs.)	Expiry Date	Contract Size
PGCL	Call	90	4.90	28, August, 2008	1925
	Call	90	8.00	25, September, 2008	1925
	Put	85	0.50	28, August, 2008	1925
	Put	90	1.35	28, August, 2008	1925

The maximum loss per contract to Mr. Goel is

(a) Rs.10,395.00
(b) Rs.12,031.25
(c) Rs.16,362.50
(d) Rs.17,998.75
(e) Rs.19,731.25.

5. The information ratio and the unsystematic risk of a portfolio are 0.56 and 3% respectively. If the realized return on the above portfolio is 14.75%, the return required by the investor will be <Answer>

(a) 11.09%
(b) 11.25%
(c) 13.07%
(d) 13.98%
(e) 14.15%.

6. Mr. Sen, a portfolio manager, is handling a portfolio worth Rs.10 lakhs, of Mr. Khurana, one of his clients. After doing evaluation of this portfolio, Mr. Sen realised that the portfolio has generated the return of 12% p.a. However, the objective of Mr. Khurana was to generate a return of 13.5% p.a. This type of risk can be termed as <Answer>

(a) Portfolio risk
(b) Performance risk
(c) Systematic risk
(d) Unsystematic risk
(e) Attribution risk.

7. Which of the following statements is **not true** with respect to different asset allocation strategies? <Answer>

(a) Tactical asset allocation takes into consideration the changes in expected return, risks as well as correlations
(b) In strategic asset allocation, when each asset mix is expressed in terms of the percentage of the total amount invested in each asset class, it is termed as constant asset mix strategy
(c) Strategic asset allocation indicates an optimal asset mix to be held under normal conditions
(d) Tactical asset allocation considers the possibility of investor's risk-tolerance
(e) Insured asset allocation aims at achieving the objectives of the investor without depending on market timing.

8. The expected return on a portfolio created by Mr. Anil is 15.25% and standard deviation of its returns is 20%. If the expected utility of Mr. Anil from this portfolio is 5.25%, his risk tolerance is <Answer>

(a) 35.90%
(b) 40.00%
(c) 43.89%
(d) 57.75%
(e) 59.00%.

9. Which of the following popular approaches of asset allocation involves projecting the cash flows of the future and estimates the deficit or surplus of an individual investor? <Answer>

(a) Financial objective method
(b) 100 minus your age method
(c) Risk tolerance method
(d) 100% common stocks for long run
(e) Cash flow needs method.

10. Mr. Saurabh is a fund manager of an equity fund, which is expected to provide risk premium of 8.5% p.a. T-Bills are trading at 7.5% p.a. Mr. Piyush, an investor, chooses to invest Rs.84,000 in equity fund managed by Mr. Saurabh and Rs.16,000 in T-Bills. The expected return to Mr. Piyush on his investment is <Answer>

(a) 11.54%
(b) 12.42%
(c) 13.16%
(d) 14.64%
(e) 15.98%.

11. Mr. Prasad retired from Exim Brothers at the age of 60 years. His pensionable years of service are 30 years. After retirement, if he is drawing monthly pension of Rs.11,428.57 under Employees' Pension Scheme (EPS), his last 10 months' monthly average salary is approximately <Answer>

(a) Rs.25,000
(b) Rs.28,650
(c) Rs.31,890
(d) Rs.35,000
(e) Rs.36,760.

12. Which of the following statements is/are **not true** with respect to different types of Endowment funds? <Answer>

I. Term Endowment funds are received from external donors with the restriction that the principal or gift amount is to be retained in perpetuity and cannot be spent.
II. In True Endowment funds, all or part of the principal amount may be expended only after the expiration of a stated period of time or occurrence of a specified event, depending on donor wishes.
III. Quasi Endowment funds must retain the purpose and intent as specified by the donor or source of the original funds and earnings may be expended only for the specified purpose.

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

13. If the money weighted quarterly rates of return from a portfolio during a year are 4%, 9%, 5% and 11%, its Linked Internal Rate of Return (LIROR) for the year would be <Answer>

(a) 33.67%
(b) 32.12%
(c) 31.45%
(d) 30.75%
(e) 29.00%.

14. Pure cash matching strategy of portfolio dedication can be easily implemented by using <Answer>

(a) Low coupon bonds
(b) High rated coupon bonds
(c) High coupon bonds
(d) Government bonds with low coupon rate
(e) Zero coupon bonds.

15. Consider two well diversified portfolios A and B. The expected returns on portfolio A and portfolio B are 14% and 14.68% respectively. Economy has only one factor represented by Beta (β). If $\beta_A = 1$ and $\beta_B = 1.1$, the risk-free rate of return is expected to be <Answer>

(a) 7.50%
(b) 7.35%
(c) 7.20%
(d) 7.05%
(e) 6.90%.

16. Which of the following factors represent the value measure as explained by Goldman Sachs Asset Management (GSAM) Factor Model? <Answer>

(a) Price Momentum
(b) Retained EPS/Price
(c) Estimate revisions
(d) Beta
(e) Disappointment risk.

17. The average realized return on a portfolio is 12.75% and average return on the market index is 10.5%. If beta of the portfolio is 0.96 and risk free rate of return is 7.5%, Jensen's alpha of the portfolio is <Answer>

(a) 1.75%
(b) 2.09%
(c) 2.37%
(d) 2.85%
(e) 2.95%.

18. If systematic risk and unsystematic risk of a portfolio are $125(\%)^2$ and $200(\%)^2$ respectively, the proportion of variance of the portfolio returns **not** explained by the index is <Answer>

(a) 14.23%
(b) 25.42%
(c) 38.46%
(d) 61.54%
(e) 62.50%.

19. Historically, it is observed that Sensex has been providing risk premium of 8% p.a. and treasury bills have been providing an average return of 7% p.a. According to the CAPM, which of the following securities is/are **correctly** priced? <Answer>

Security	β_i	Required return (%)
A	1.0	20.0
B	1.2	21.0
C	1.5	18.5
D	1.4	18.2

(a) Only A
(b) Only C
(c) Only D
(d) Both A and B
(e) Both C and D.

20. Which of the following risks is eliminated through the process of immunization? <Answer>

(a) Purchasing power risk
(b) Political risk
(c) Interest rate risk
(d) Currency risk
(e) Volatility risk.

21. Which of the following statements is **not true** with respect to various assumptions of basic Black-Scholes model of Option Pricing? <Answer>

(a) European exercise terms are used
(b) The stock pays no dividend during the option's life
(c) Interest rate remains constant and known
(d) Returns are lognormally distributed
(e) There are transaction costs and taxes.

22. Which of the following are the key drivers of the investment policies of institutional investors? <Answer>

I. Asset-liability matching.
II. Regulatory and legal considerations.
III. Liquidity needs.
IV. Unique needs, circumstances and preferences.

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

23. Under bond portfolio management, which of the following strategies is/are semi active? <Answer>

I. Bond laddering.
II. Dedication.
III. Immunization.

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

24. The following is the information pertaining to probabilities associated with the different economic scenarios and the probabilities for the returns on the stock of Rolta India: <Answer>

Economic Scenario	Probability of Economic Scenario	Performance of Stock	Probability of Stock's performance in given economic scenario
Prosperity	0.3	Good Average Poor	0.4 0.4 0.2
Normal	0.5	Good Average Poor	0.3 0.4 0.3
Recession	0.2	Good Average Poor	0.3 0.3 0.4

The probability of prosperity in economy and the stock will experience good performance is

(a) 0.20
(b) 0.15
(c) 0.12
(d) 0.06
(e) 0.04.

25. The stock of Pantaloon Retail has a beta of 0.82 with residual risk of 9.79%. If standard deviation of the market returns is 32%, the standard deviation of return on the stock is approximately <Answer>

(a) 32%
(b) 28%
(c) 24%
(d) 19%
(e) 16%.

26. Which of the following statements is **true** with respect to value at risk (VAR)? <Answer>

(a) Historic Simulation method of computing VAR is based on Modern Portfolio Theory
(b) Variance/Covariance method of computing VAR involves the use of historical market data, and calculating the market value of the portfolio for each day over a specified period of time
(c) Monte Carlo Simulation method of computing VAR is also termed as correlation method
(d) VAR assumes that the risk exposures are affected by only one risk factor
(e) Variance/Covariance method of computing VAR is used to generate a large number of market movements which are consistent with expected volatility and correlations.

27. Consider the following portfolios: <Answer>

Portfolio	Expected Return (%)	Standard Deviation (%)
A	10	23
B	18	28
C	14	18
D	8	12
E	5	6

As described by Markowitz, which of the above portfolios cannot lie on the efficient frontier?

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

28 A high ratio of net selectivity to total selectivity for a portfolio indicates <Answer>

(a) High risk appetite of investor
(b) Risk averse nature of investor
(c) Superior stock selection skills
(d) Low beta of the portfolio
(e) High risk averse nature of investor.

29 A portfolio strategy in which specific assets are earmarked to satisfy the needs of a known future cash outlay is known as <Answer>

(a) Portfolio dedication
(b) Portfolio insurance
(c) Portfolio revision
(d) Portfolio attribution
(e) Portfolio balancing.

30 If interest rate decreases, duration of a 25-year bond selling at a premium <Answer>

(a) Increases
(b) Decreases
(c) Decreases first, then increases
(d) Increases first, then decreases
(e) Remains the same.

END OF SECTION A

Section B : Problems/Caselet (0 Marks)

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

1. Consider the following data pertaining to stock prices of Bajaj Auto Finance Ltd., during first 11 trading days of July 2007 and July 2008: <Answer>

Trading days in July, 2007	Stock Price (Rs.)	Trading days in July, 2008	Stock Price (Rs.)
1	379.65	1	131.20
2	379.35	2	135.30
3	370.00	3	134.65
4	361.95	4	134.50
5	361.25	5	140.40
6	365.95	6	138.75
7	365.55	7	142.90
8	374.60	8	144.50
9	372.05	9	134.90
10	373.05	10	134.75
11	375.25	11	130.30

You are **required** to test whether the changes in stock prices are independent or not. Detailed workings should be part of your answer. **(10 marks)**

2. Mr. Mohan, an investor is trying to analyze the selection skills of 4 fund managers. You are an analyst whom he approaches for advice. The relevant data about the funds is given as under: <Answer>

Fund	Return (%)	Unsystematic risk $(\%)^2$	Beta
JM Mutual Fund	24.00	18.00	1.32
Dundee Mutual Fund	19.32	17.00	1.21

Alliance Mutual Fund	18.36	13.00	1.09
First India Mutual Fund	21.76	16.00	1.11
Market	18.00	–	1.00

The variance on the return from the market portfolio is 324(%)^2. The risk free rate of return is 7.5%.

For the above four fund managers, you are **required** to compute

a. Return due to selectivity. **(7 marks)**

b. Return due to net selectivity. **(4 marks)**

3. The 3-month futures contract on NSE Nifty maturing on 24/12/2008 is currently trading at 4,432.20. The current value of NSE Nifty is 4,415.75. The one-year risk free rate is 7.5% and the year end dividend yield on NSE Nifty is 4%. (All the stocks constituting the market index pay dividend during the three-month period). <Answer>

You are **required** to

a. Determine by how much is the futures contract mis-priced. **(5 marks)**

b. Formulate a zero-net-investment arbitrage portfolio, so that you can lock in risk-free profits equal to the futures mis-pricing. (Assume that no margin is required). **(5 marks)**

Caselet

Read the caselet carefully and answer the following questions:

4. While planning for retirement, there are various considerations to be kept in mind by an individual. Elucidate. <Answer> **(10 marks)**

5. According to the caselet, retirement planning is an essential element of any financial plan. Explain. <Answer> **(9 marks)**

Retirement planning is an essential element of any financial plan. Retirement planning is a comprehensive process for determining how much money you will need when you retire. Retirement planning also helps you identify the best ways to save for retirement given your financial situation.

If you are like most people, you probably think retirement planning is only important when you retire. However, proper planning requires a much longer period of time, from the day you start working until well beyond your actual retirement date. In fact, it's never too early to start planning for your retirement.

At the age of 65, the average man will live almost 19 more years, while the average woman will live another 22 years. We will probably spend 25 per cent to 30 per cent of your life in retirement, requiring vast sums of money to support yourself.

In India, many of us put off retirement planning because we are too busy trying to meet our immediate financial needs to think about what will happen 20 or 30 years hence. Planning for retirement is more important especially in India.

It's easy to understand why meeting your monthly bills seem more important, especially if your retirement is still far off. But here's something to think about: As you move through your life, you will experience many life events that will affect your future financial security such as getting married, starting a family, purchasing a home, and sending your children to college. Each of these events will affect your ability to plan for your future financial security. If you develop a flexible long-term plan, you can overcome these obstacles and ensure financial independence in your retirement years.

When defining your retirement goals, your description should be specific and measurable. For example, a goal to "retire at age 60 with resources to sustain

current living expenses of Rs.1,00,000 per year" is a goal, which is both specific and measurable.

If you have several goals, you should prioritize them so that your resources will be allocated to the most important goal first. By assigning a priority to each goal, you also ensure that secondary goals won't take precedence over primary goals. In this process, it is important to understand your needs. To determine the appropriate percentage for your retirement, you need to determine if any of your current expenses will change when you retire. Will your travel and leisure expenditures increase? Will your job-related expenses for commuting and clothing change? Will you have to pay more for medical costs? It's generally accepted that many of your routine annual expenses will change during your retirement years. The trick is determining whether those expenses will increase or decrease, and by how much.

Both living expenses and inflation are important in understanding your retirement needs because you are planning for a period of time, not a point in time.

Once you develop your plan, the process is dynamic. As you revise and prioritize your projected goals, you may see changes in your estimated income needs, projected resources, and other assumptions. It's a good idea to review your action plan regularly and if necessary, make changes to make sure that it still meets your needs. Finally, a successful retirement plan requires your active involvement and long-term commitment.

END OF CASELET

END OF SECTION B

Section C : Applied Theory (20 Marks)

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

6. Indexing strategy is one form of passive management strategies. Under this strategy, a bond portfolio is formed with the objective of replicating the performance of selected index. Explain the advantages and disadvantages of indexing strategy. **(10 marks)** <Answer>

7. The process of asset allocation is dynamic as well as integrated. Therefore, it may be desirable to skip some of the steps in the allocation process. In this regard, discuss the different types of asset allocation. **(10 marks)** <Answer>

END OF SECTION C

END OF QUESTION PAPER

Suggested Answers
Portfolio Management (CFA640) : October 2008

Section A : Basic Concepts

Answer **Reason**

1. E Assumptions mentioned under (a), (b), (c) and (d) are the assumptions specific to CAPM, which APT does not assume. ≤

2. D Bielard, Biehl and Kaiser five-way model classifies investors into five categories: ≤

Individualists – They are confident and careful. They generally do not go to a consultant to manage their investments but do it by themselves.

Adventurers – Adventurers generally go for only big bets. They have the resources to do so and are willing to take risks. The investment made by this type of investors are generally focused and not diversified.

Celebrities – Celebrities are those that are swayed too much by the trend and do not have any expertise or opinion about investments. However, not having the expertise and the confidence required to manage the portfolio on their own, they approach investment managers frequently.

Guardians – Guardians are both anxious and careful. Lacking confidence in themselves, they approach investment counsels. They generally emphasize on safety of the capital while making the investments and a significant proportion of their investments is generally devoted to government securities and guaranteed return investments.

Straight arrows – These are halfway between complete confidence and anxiety, and extreme carefulness and impetuousness.

3. B Dollar cost averaging works out well over a long period. In it a fixed amount is invested every time irrespective the prevailing price of the share. Hence (a) and (c) are not correct. ≤

Further, (d) is not correct, as variable ratio plan is more complicated.

Similarly (e) is not correct, as one requires the forecast of the level to which stock prices may rise or fall.

4. B A straddle involves a call and a put option with the same exercise price and the same expiration date. A straddle buyer buys a call and a put option and the seller sells a call and put option at the same exercise price and the same expiration date. The maximum loss associated with a long straddle position is the cost of the two options (the premium paid for buying the options). Profit potential is unlimited when the prices of the underlying asset rise significantly and limited when they fall significantly. ≤ TOP ≥

As Mr. Goel has created long straddle strategy by buying call and put option with same exercise price and the same expiration date, the maximum loss will be cost of the two options.

Maximum loss = (4.90 + 1.35) X 1925 = Rs.12,031.25

5. C ≤

Information ratio =

0.56 =

Portfolio alpha = 1.68%

Portfolio alpha = Expected return – Required return

1.68 = 14.75 – Required return

Required return = 13.07%.

6. B The inability to satisfy the investor's objectives is termed as performance risk. The difference between the performance of the managed portfolio and the performance of the benchmark index is termed "tracking error". Performance refers to the return on the portfolio over a particular time period in which the evaluation is done. The risk is said to occur when the tracking error is negative, i.e., the return on the managed portfolio is less than the return on the benchmark index. This risk is referred to as tracking error risk. ≤

7. D Tactical asset allocation takes into consideration the changes in expected return, risks as well as correlations, but it does not consider the possibility of investor's risk-tolerance. In strategic asset allocation, when each asset mix is expressed in terms of the percentage of the total amount invested in each asset class, it is termed as constant asset mix strategy. Strategic asset allocation indicates an optimal asset mix to be held under normal conditions. Insured asset allocation is aimed at achieving the objectives of the investor without depending on market timing. Hence, alternative (d) is answer. ≤

8. B ≤

Utility = E(r) –

5.25 = 15.25 –

= 15.25 – 5.25 = 10.00

t_k =

t_k = 40%.

9. E Cash flow needs method of asset allocation involves projecting the cash flows of future and estimating deficit or surplus of a individual investor. ≤

10. D Expected return on equity fund = 7.5 + 8.5 = 16% ≤

Expected return on the portfolio of Mr. Piyush = 0.84 ×16 + 0.16 × 7.5 = 14.64%.

11. A The amount of monthly pension under EPS is calculated as under: Pension = (Pensionable salary X (pensionable years of service + 2)) /70 ≤

Where, Pensionable salary is the last 10 months' average salary.

Therefore,

11,428.57 = (Pensionable salary X (30 +2)) /70

Pensionable salary = Rs.24,999.99 ≈ Rs.25,000 (app.)

12. C I. True Endowment funds are received from external donors with restriction that the principal or gift amount is to be retained in perpetuity and cannot be spent. ≤

II. In Term Endowment funds all or part of the principal may be expended only after the expiration of a stated period of time or occurrence of a specified event, depending on donor wishes.

III. Quasi Endowment funds must retain the purpose and intent as specified by the donor or source of the original funds and earnings may be expended only for the specified purpose.

Hence, statement (I) and (II) are not true and correct answer is option c.

13. B LIROR = (1.04) (1.09) (1.05) (1.11) – 1 = 32.12%. ≤

14. E Pure cash matching strategy of portfolio dedication can be implemented very easily by using zero coupon bonds because balancing of coupon with liabilities doesn't arise and only fixed value of zero coupon bond at different points of time with respective liability should be achieved.

15. C $\Sigma (r_A) = r_f + \beta_A (r_m - r_f)$

$14 = r_f + 1 (r_m - r_f)$…… 1

$\Sigma (r_B) = r_f + \beta_B (r_m - r_f)$

$14.68 = r_f + 1.1 (r_m - r_f)$ ……2

From equation 1 $r_m - r_f = 14 - r_f$

Substituting this value of $(r_m - r_f)$ in equation 2 we get

$14.68 = r_f + 1.1 (14 - r_f)$

$14.68 = r_f + 15.4 - 1.1\ r_f$

$0.1\ r_f = 0.72 \quad \Rightarrow r_f = 7.20\%$

16. B Goldman Sachs Asset Management factor model uses the following three measures.

(i) Value

(ii) Growth and momentum

(iii) Risk

The factors used in this model are

Value	Growth and Momentum	Risk
i. Book/Price	i. Estimate revisions	i. Beta
ii. Retained EPS/Price	ii. Price momentum	ii. Residual risk
iii EBITD/Enterprise value	iii. Sustainable growth	iii. Disappointment risk

Retained EPS/Price is value measure. Price momentum and estimate revisions growth and momentum measures. Beta and disappointment risk are risk measures. Hence, (b) is answer.

17. C Jensen's alpha = Realized return on portfolio P- Expected return on portfolio P

12.75 – [7.5+0.96(10.5-7.5)] = 2.37%.

18. D

Proportion of variance not explained by index = = 61.54%

TOP

19. C The expected return on a security is given by $R_i = R_{f+} \beta_i (R_m - R_f)$. Substituting the corresponding values ≤

Security	B_i	Required return (%)	Expected return (%)
A	1.0	20.0	7 + 1.0(8) = 15
B	1.2	21.0	7 + 1.2(8) = 16.6
C	1.5	18.5	7 + 1.5(8) = 19
D	1.4	18.2	7 + 1.4(8) = 18.2

Expected return$_A$ < Required return$_A$

Expected return$_B$ < Required return$_B$

Expected return$_C$ > Required return$_C$

Expected return$_D$ = Required return$_D$

Therefore security A and B are undervalued, whereas security C is overvalued and security D is fairly priced.

Hence the correct answer is (c).

20. C Immunization is the process of eliminating interest rate risk by adjusting the duration of the assets and liabilities via the future market or portfolio rebalancing. ≤

21. E The assumptions of Black Scholes model are: ≤

- The stock pays no dividends during the option's life
- Markets are efficient
- There are no transaction costs or taxes
- Interest rates remain constant and known
- Returns are lognormally distributed
- European exercise terms are used.

Hence, alternative (e) is answer.

22. E The key drivers of the investment policies of institutional investors are as follows: ≤

- Asset-liability matching
- Regulatory and legal considerations
- Tax considerations
- Liquidity needs
- Unique needs, circumstances and preferences.

23. D Bond laddering is a passive strategy because it involves investing in bonds with several maturity dates to minimize fluctuations in the current level of income. Normally, no intermediate revision takes place. Dedication and Immunization are semi-active strategies where intermediate revisions are required because of changing circumstances. ≤

24. C The probability of economy being in prosperity stage is 0.3 and the probability that the stock experiences good performance is 0.4. The probability with which both the conditions will prevail simultaneously is 0.12. ≤

25. B

Variance of the return on stock of Pantaloon =

=

= 0.0784

Standard deviation of the return on stock of Pantaloon = 28%.

26. D Variance/Covariance method is based on Modern Portfolio Theory.

Historic Simulation method involves the use of historical market data, and calculating the market value of the portfolio for each day over a specified period of time.

Variance/Covariance method is also termed as correlation method.

VAR assumes that the risk exposures are affected by only one risk factor.

Historic Simulation method is used to generate a large number of market movements which is consistent with expected volatility and correlations.

27. A The portfolio A cannot lie on the efficient frontier because it is dominated by another portfolio. For example, portfolio C has higher expected return and lower standard deviation.

28. C A high ratio of net selectivity to total selectivity for a portfolio indicates that the return required for inadequate diversification is less. This indicates superior stock selection skills.

29. A A portfolio strategy in which specific assets are earmarked to satisfy the needs of a known future cash outlay is known as portfolio dedication.

30. A If interest rate decreases, the YTM of the bond selling at premium will also decrease. There is an inverse relationship between duration and YTM and therefore duration will increase.

Section B : Problems/Caselet

1.

Days	Price changes (X)	Price changes (Y)	X^2	Y^2	XY
2	-0.30	4.10	0.09	16.81	-1.23
3	-9.35	-0.65	87.42	0.42	6.08
4	-8.05	-0.15	64.80	0.02	1.21
5	-0.70	5.90	0.49	34.81	-4.13
6	4.70	-1.65	22.09	2.72	-7.76
7	-0.40	4.15	0.16	17.22	-1.66
8	9.05	1.60	81.90	2.56	14.48
9	-2.55	-9.60	6.50	92.16	24.48
10	1.00	-0.15	1.00	0.02	-0.15
11	2.20	-4.45	4.84	19.80	-9.79
Total	-4.4	-0.9	269.29	186.54	21.53

= -4.4 = -0.9

= -0.44 = -0.09

= 0.1936 = 0.0081

b = = = = 0.0790

a = - b = -0.09 – (0.0790)(-0.44) = -0.09 + 0.0348 = -0.0552

r^2 =

= = = 0.00895

r = 0.0946

We observe that the correlation between the prices in two different periods is very small and insignificant. Therefore, we conclude that the prices moved in a random fashion.

2.a. <

Fund	R_i		β_i		=
JM Mutual Fund (A)	24.00	18.00	1.32	564.54	582.54
Dundee Mutual Fund (B)	19.32	17.00	1.21	474.37	491.37
Alliance Mutual Fund (C)	18.36	13.00	1.09	384.94	397.94
First India Mutual Fund (D)	21.76	16.00	1.11	399.20	415.20

Fund	$R_f + \beta_i (R_m - R_f)$	R_i	Return due to selectivity
A	21.36	24.00	2.64
B	20.21	19.32	-0.89
C	18.95	18.36	-0.59
D	19.16	21.76	2.60

b.

Fund	$R_f + \sigma_i/\sigma_m (R_m - R_f)$	Return due to net selectivity
A	21.59	2.41
B	20.43	-1.11
C	19.14	-0.78
D	19.39	2.37

3.a. Annual risk free rate = 7.5% <

∴Quarterly risk free rate = 1.875%

Fair price of the futures contract

= 4415.75 × (1 + 0.01875) – (4415.75 X 0.04)

= 4498.55 – 176.63

= 4321.92

Actual price of the 3-month futures contract is 4432.20. So, the futures contract is 110.28 above the fair level.

b. Sell the relatively expensive futures and Buy the relatively cheap index

	Cash Flow Now	Cash Flow after 3 months
Buy Index	– 4415.75	+ (S_T + 176.63)
Sell Futures	0	4432.20 – S_T
Borrow Rs.4415.75 @ 7.5% p.a	+ 4415.75	– 4498.55
For three months	0	110.28

4.Start saving early <

Even a small sum of money saved regularly and invested regularly makes a big amount, which will come in very handy after retirement. One should not believe that after retirement, one can place all savings into income generating investment and spend rest of life in happiness. If you don't plan early, you could end up eroding your principal savings in order to have to supplement your monthly income.

The key to a financially independent future is "sooner the better". Cautious investors believe in this principal and plan their retirement accordingly. They not only save, they save early and regularly. . The catch is to make the power of compounding work one's benefit.

Retirement should be your top priority

Retirement should be kept as a top priority because if one does not keep it at the top one might end up depending on one's children, which probably no one would relish.

Create a Retirement Plan

Develop a plan for saving based on your requirements at the time of retirement. The goals you keep for saving depend on your lifestyle but you will need at least about 66% of your pre-retirement income to maintain your standard of living when you stop working.

Understand your pension plan

If your employer offers on pension plan, understand carefully your benefit level, financial stability of plan and the vesting period. Use retirement plans even if you already have enough money.

With retirement plans your money grows in a tax efficient manner and compounding interest over time makes it one of the best investment options.

Balance your risk tolerance and your investment strategy

Evaluate your risk profile and then balance your investment strategy to invest in various avenues to get the most out of your retirement money keeping your risk profile unhampered.

Diversify your investments & allocate your assets carefully. Depending on your work profile divide your savings into equity, bonds, Mutual Funds, and other investment avenues. Don't invest too heavily in one sector or one company, since the risk associated with putting all your eggs in one basket is indeed very high.

Save and invest Regularly

Saving and investing regularly makes a big difference at the time of retirement. Investing at regular intervals builds your retirement fund over time and helps you to minimize risk and gives a tension free retirement-a time to pursue your hobbies, fulfill your dreams and passions.

5.Retirement planning is an essential element of a financial plan, because <

- We retire only from work, not from life. A retirement plan is an assurance that you will continue to earn a satisfying income and enjoy a comfortable lifestyle, even when you are no longer working.
- An increasing number of young Indian professionals are moving away from the traditional joint family structure. Since support no longer comes easily, parents have realized the need to provide for themselves during their retirement years.
- Skyrocketing costs throw even a well-salaried person off balance. With rates rising everyday, you can imagine how high they will be when you are ready to retire. A retirement plan provides you with a steady income every month, to arm you in the face of rising costs.
- Only 4% of India working population- mostly government employees – are covered by pensions. The remaining 96% comprises of self-employed and salaried professionals who do not have a formal, mandated provision for pensions.

Section C: Applied Theory

6. One of the primary factors driving bond portfolio managers towards indexing is the unimpressive performance of the active management strategies. Poor and inconsistent performance of the active bond portfolio managers in the past has turned the investors to index funds. In the past, returns earned by most active fund managers could match or outperform the market indices; their performance was not consistent over a period of time. Therefore, the investors naturally turned to index funds where they could obtain consistently higher long-term returns and reliable short-term performance. < TOP >

Another factor driving interest in index funds is the lower advisory fee schedule. Compared with active fund management, advisory fee schedule is very attractive for indexed funds. In the USA, advisory fees for index funds range between 30 and 70 percent of advisory fees for actively managed funds. This leads to substantial lower advisory fee schedule; transaction costs will also be lower for the index funds. This is because of lower turnover of assets and hence fewer transaction in the portfolio.

Another advantage of indexing is the degree of control exercised by the investor. Under active management, the investor has little control over the fund manager’s investment decisions at any point of time. By indexing, the investor can specify the benchmark as well as the degree of latitude allowed to the index fund manager to deviate from the benchmark characteristics. For example, an active fund manager can change the duration of the portfolio to any extent

depending on his interest rate forecast, but index fund manager may be constrained by, say, a maximum deviation of 10 per cent from the duration of the index. Thus, the investor can have a greater degree of control over investment under indexing strategy.

Indexing facilitates easier and better measurement of performance of the fund manager. Performance of a fund manager is measure by comparing the total return of the portfolio with the total return of the benchmark. Most widely used benchmarks are broad market indexes. Such comparison under active investment management has two serious shortcomings. The selected index may not be the appropriate benchmark for the fund manager. Secondly, deviations of portfolio characteristics from the benchmark characteristics, which explain the relative performance, are not thoroughly examined. These shortcomings can be overcome by indexing. Extensive search for the appropriate index must precede establishing the index fund, which ensures identification of an appropriate performance benchmark. Secondly, index fund investors can focus on the deviation of return of the portfolio from that of benchmarked index and require fund managers to attribute these deviations to specific benchmark characteristics.

Although indexing has many advantages over active management of portfolio, it has some disadvantages also. One of the main disadvantages of indexing is the loss of incremental returns, which could have been generated by investing in sectors with the highest performance. By not investing in better performing sectors and securities, the opportunity cost can be substantial. Different sectors and different types of securities like treasuries, corporate bond, mortgage-backed securities, etc., can generate incremental returns for the portfolio.

Another limitation of index funds is the rigid requirements associated with these funds. There may be attractive opportunities for investment outside the benchmark universe. If the fund manager is not allowed to invest in securities outside the universe of the benchmark index, then some attractive investment opportunities may be foregone.

7. The process of asset allocation described above is referred to as integrated asset allocation. < TOP > The name is justified, considering that all the major aspects of asset allocation have been included in the analysis, in a systematic manner. If you recall the process explained once again, you will realize that the process involves not only integrating all the aspects, but also review of the allocation. Thus, the process is dynamic as well as integrated. Sometimes it may be desirable to skip some of the steps in the allocation process. Depending on the steps that are skipped, asset allocation can be of three types – strategic asset allocation, tactical asset allocation and insured asset allocation.

Strategic Asset Allocation

Strategic asset allocation is also referred to as long run asset allocation or policy asset allocation. Strategic asset allocation is generally undertaken periodically. In this type of asset allocation, relatively few and broad categories of assets are considered. For example, one may consider the mix of stocks and bonds in various proportions starting from say, 10% in bonds and 90% in stocks to 10% in stocks and 90% in bonds. Using these proportions, the likely range of outcomes from the investment are estimated. The asset mix thus chosen by the investor is taken as the long run or the policy asset mix. Generally, the asset mix is held constant. Such a strategy is referred to as constant asset mix strategy. This should not be confused with a buy-and-hold strategy. In a constant mix strategy, transactions are necessary to ensure that the mix remains constant.

In strategic asset allocation, long run predictions regarding the capital markets are used. These are assumed to be constant during the period of analysis (planning horizon). Thus, in the asset allocation process, we no longer have the step relating to prediction of future on an ongoing basis as, once predicted, the conditions are taken to be constant. Similarly, the risk tolerance of the investor is also assumed to remain constant during this period.

Tactical Asset Allocation

Tactical asset allocation is performed routinely, as part of active asset management. It is aimed at benefitting from short run underpricing and overpricing of assets. Tactical asset allocation may involve switching funds between equities, bonds and cash. Within equities and bonds, investments may also be switched from one category of equities to another and one category of bonds to another. In this type of asset allocation, it is assumed that the risk tolerance of the investor is constant. Tactical asset allocation decisions are often contrarian. They are made with a view to benefit from a steep fall or rise in the market. The basic assumption in this type of asset allocation is that markets overreact to information. Implicit in this is the belief of the investors that make tactical allocation that their predictions regarding the movements of the market are not only different from the other investors, but are also superior.

In tactical asset allocation, as already explained, changes in the risk tolerance of the investor

are ignored. But, it does not mean that the risk characteristics of the investments are also ignored. They are not.

Insured Asset Allocation

Insured asset allocation is aimed at achieving the objectives of the investor without depending on market timing, unlike tactical asset allocation. Insured asset allocation is very similar to tactical asset allocation in that it is applied routinely as part of active asset management. This type of asset allocation is based on the assumption that the risk tolerance of the investors is highly sensitive to the changes in their net worth. A minimum value of the net worth or asset value (as the case may be, based on the goal), is called the floor. If the value of the assets or net worth crosses the floor, the allocation to risky assets is increased. Above the floor, higher the value, higher the allocation to risky assets. Similarly, lower the value, lower the allocation to risky assets. That is, the asset mix is made conservative. At any rate, it is ensured that the floor value is achieved. This type of asset allocation does not, as can now be seen, focus on the desirability of investing in more risky assets based on their risk-return characteristics. It is based on the implicit assumption that risk-return characteristics of the asset classes remain constant.

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