

University of Pune
Department of Management Sciences (PUMBA)
Executive MBA Programme

404 (B) : Security Analysis and Portfolio Management

Max. Marks : 50

Time : 2 ½ Hours

Instructions : Attempt any five. All questions carry equal marks.

1. Stock of Orion Ltd is currently selling for Rs.28/share. You put a limit order to buy at Rs.24, the limit order will be valid for 1 month. During one month if price declines to Rs.20 and then jumps to Rs.36. Ignore commissions and calculate the following:
- What would be your rate of return on this investment?
 - Instead of a limit order had you put a market order, what would be the rate of return?
 - What if your limit order was Rs.18?

2.

Stock	31-Dec-07		31-Dec-08	
	Price	Shares	Price	Shares
W	Rs. 75.00	10000	Rs. 50.00	20000
X	Rs.150.00	5000	Rs. 65.00	10000
Y	Rs. 25.00	20000	Rs. 35.00	20000
Z	Rs. 40.00	25000	Rs. 50.00	25000

Stocks W and X had 2 for 1 splits after the close on Dec 31, 2007.

- Calculate the price weighted index for Dec 31, 2007, prior to the splits
 - Calculate the price weighted index for Dec 31, 2007, post split
 - Calculate the price weighted index for Dec 31, 2008
 - Calculate the percentage return in the price weighted index for the period Dec 31, 2007 to Dec 31, 2008
3. The utility function of an is $U(W) = \text{SQUARE ROOT}(W)$. The investor has Rs.100,000. There is an investment opportunity which may yield either Rs.50,000 or Rs.150,000. The probability of either of the events is 0.5.
- What is the utility level at wealth level Rs. 50,000 and Rs. 100,000
 - Calculate the expected utility
 - Find the certainty equivalent of this investment

4. Data regarding stocks A & B is as follows:

Stock	Expected Return	Standard Deviation
A	10%	5%
B	15%	10%

Correlation Coefficient between A & B = -1

Suppose it is possible to borrow at risk free rate, what must be the value of the risk free rate?

5. LT Ltd has issued annual coupon bonds with the following features:

Coupon	YTM	Maturity	Macaulay Duration
8%	8%	15years	10years

- Calculate Modified Duration from the above information
- Identify in which direction (up/down) will the modified duration change for the following conditions:
 - Coupon of the Bond was 4% not 8%
 - Maturity of the bond was 7years not 15 years

6. You buy 3 shares today of a particular scrip and every subsequent year sell 1 share. The stock pays no dividend.

Time	Price	Action
0	90	Buy 3 shares
1	100	Sell 1 share
2	100	Sell 1 share
3	100	Sell 1 share

- Calculate the time weighted geometric average return on this portfolio
 - Calculate the time weighted arithmetic average return on this portfolio
 - If rupee weighted average rate of return is 5.46%, comment why the rupee weighted return is higher/lower than the answers in a and b.
7. Explain the Confidence Index theory

University of Pune
Department of Management Sciences (PUMBA)
404 (B): Security Analysis & Portfolio Management

Max. Marks: 50

Time: 2 ½ Hours

Note:

- 1) Scientific/Financial calculators allowed
- 2) All questions carry 10 marks.
- 3) Solve any 5 questions out of 8 questions.

1. Sally Ride has a margin account and deposits Rs.50,000. Assuming the prevailing margin requirement is 40%. Ignore commissions. Stock of Rockwell industries is selling at Rs.35/share.
 - a. Calculate the maximum number of shares Sally can purchase.
 - b. Calculate the profit/loss if price of the stock rises to Rs.45
 - c. Maintenance margin requirement is 30%, at what price will Yuri receive a margin call from the broker.

2.

		31-Dec-07	31-Dec-07	31-Dec-08	31-Dec-08
Stock	Price	Shares	Price	Shares	
W	Rs. 75.00	10000	Rs. 50.00	20000	
X	Rs.150.00	5000	Rs. 65.00	10000	
Y	Rs. 25.00	20000	Rs. 35.00	20000	
Z	Rs. 40.00	25000	Rs. 50.00	25000	

Stocks W and X had 2 for 1 splits after the close on Dec 31, 2007.

- a. Calculate the price weighted index for Dec 31, 2007.
 - b. Calculate the value weighted index for Dec 31, 2007, post split
3. The utility function of an is $U(W) = \text{SQUARE ROOT}(W)$. The investor has Rs.100,000. There is an investment opportunity which may yield either Rs.50,000 or Rs.150,000. The probability of either of the events is 0.5.
 - a. What is the utility level at wealth level Rs. 50,000 and Rs. 100,000
 - b. Calculate the expected utility
 - c. Find the certainty equivalent of this investment
 4. Data regarding stocks A & B is as follows:

Stock	Expected Return	Standard Deviation
A	10%	5%
B	15%	10%

Correlation Coefficient between A & B = -1

Suppose it is possible to borrow at risk free rate, what must be the value of the risk free rate?

5. You manage a risky portfolio with expected rate of return =18% and standard deviation equal to 28%. The T-bill rate is 8%. Your clients degree of risk aversion is $A=3.5$. You are expected to create an optimal portfolio for the client using the utility function $U=E(r) - 0.005A(\text{Std. Dev})^2$
- What proportion of the client's money should be invested in the risky portfolio?
 - What is the expected value and standard deviation if the rate of return on your clients optimized portfolio?

6. LT Ltd has issued annual coupon bonds with the following features:

Coupon	YTM	Maturity	Macaulay Duration
8%	8%	15years	10years

- Calculate Modified Duration from the above information
- Identify in which direction (up/down) will the modified duration change for the following conditions:
 - Coupon of the Bond was 4% not 8%
 - Maturity of the bond was 7years not 15 years

7. You buy 3 shares today of a particular scrip and every subsequent year sell 1 share. The stock pays no dividend.

Time	Price	Action
0	90	Buy 3 shares
1	100	Sell 1 share
2	100	Sell 1 share
3	100	Sell 1 share

- Calculate the time weighted geometric average return on this portfolio
 - Calculate the time weighted arithmetic average return on this portfolio
 - If rupee weighted average rate of return is 5.46%, comment why the rupee weighted return is higher/lower than the answers in a and b.
8. Explain the Confidence Index Theory

University of Pune
Department of Management Sciences (PUMBA)

404 (B) – Security Analysis & Portfolio Management

Max. Marks : 50

Time : 2 ½ Hours

SECTION I

Solve any 6 out of 8 (7marks each)

- Q.1.** You borrowed Rs.20,000 on margin to buy shares in OYL Ltd. which is now selling at Rs.40 per share. Your account starts at the initial margin requirement of 50%. The maintenance is 35%. Two days later the stocks price falls to Rs.35 per share.
- Will you receive a margin call?
 - How low can the price fall before you receive a margin call?

- Q.2.** Consider the following three stocks in the following table.

Stock Name	P ₀	Q ₀	P ₁	Q ₁	P ₂	Q ₂
A	90	100	95	100	95	100
B	50	200	45	200	45	200
C	100	200	110	200	55	400

P represents price and Q represents the number of shares outstanding in that period.
Stock C splits two for one in last period.

- Calculate the rate of return on a market value weighted index of the three stocks for the first period (Time=0 to Time=1)
 - What must happen to the divisor for the market value weighted index in year 2?
 - Calculate the rate of return for the second period (Time=1 to Time=2).
- Q.3.** You manage a risky portfolio with expected return of 18% and standard deviation of 28%. The T-Bill rate is 8%. Suppose that your client has a degree of risk aversion equal to $A=3.5$ and given that utility function of $U=E(r) - 0.005A(\text{Std. Dev.})^2$ is followed.
- What proportion should be invested in the risky portfolio to maximize utility?
 - What is the expected rate of return and standard deviation of the optimal portfolio?
- Q.4.** An insurance company wants to make payments to a customer of \$10million in 1 year from now and \$4million in 5years. The yield curve is flat at 10%.
- If it wants to fully fund and immunize its obligation to this customer with a single zero coupon bond, what maturity bonds must it purchase?
 - What must be the face value and market value of that zero coupon bond?

Q.5. You buy 3 shares today of a particular scrip and every subsequent year sell 1 share. The stock pays no dividend.

Time	Price	Action
0	90	Buy 3 shares
1	100	Sell 1 share
2	100	Sell 1 share
3	100	Sell 1 share

- Calculate the time weighted geometric average return on this portfolio
- Calculate the time weighted arithmetic average return on this portfolio
- If rupee weighted average rate of return is 5.46%, comment why the rupee weighted return is higher than the answers in a and b.

Q.6. Explain the Confidence Index Theory.

Q.7. Suppose you have Rs. 10Lakh and the following assets are under consideration;
 Risk free asset earning 12% per year
 Risky asset earning 30% per year with standard deviation of 40%,
 If you construct a portfolio with a standard deviation of 20%, what will be the rate of return on that portfolio?

Q.8. Given that $U = E(r) - 0.005A(\text{Std. Dev.})^2$. A risky portfolio has an expected rate of return of 20% and standard deviation of 20%. Risk Free Rate is 7%. Which alternative will be chosen by an investor whose $A=4$ and by investor whose $A=8$. (Investor may either go for risk free portfolio or the given risky portfolio)

SECTION II

1

Answer all the following

- L & T has an issue of Rs. 1000 par value bonds with a 8.4% percent coupon rate. The issue pays coupons semi annually and has 3 years remaining to its maturity date. Bonds of similar risk are currently selling at a yield of 8.4% PA, semi annual basis. What is the duration of these bonds? (4marks)
- Investor knows all about CAPM and believes in its applicability. Consider the following situation: You have 2 portfolios A & B with the following characteristics:

Group A (25 securities)	Group B (25 securities)
Systematic Risk (Beta) =1 for each security	Systematic Risk (Beta) =1 for each security
Specific Risk is high for each security	Specific Risk is low for each security
Total Risk is high for each security	Total Risk is low for each security

In which portfolio should the investor put his/her money? Explain. (2marks)

- Suppose the risk premium on the market portfolio is estimated at 8% with a standard deviation of 22%. What is the risk premium on a portfolio invested 25% in XYZ Ltd. and 75% in ABC Limited, if both have a Beta of 1.15? (2marks)