

AFM UPDATES-SESSION 1

PRACTICAL QUESTION

QUESTION 1 - PORTFOLIO MANAGEMENT

The expected return of Kannan Associates Ltd is 11% and the beta of the stock is 0.86. The variances of the returns of the stock and the market are $144(\%)^2$ and $196(\%)^2$. The expected return on the market index is 12%. If the risk-free rate of return is 7%, which of the following statements is/are **true**?

- I. The stock is under priced.
 - II. The stock plots below the Security market line.
 - III. The return on the company's stock exceeds its normal return by 0.3%.
- (A) Only (I) above
(B) Only (II) above
(C) Both (I) and (III) above
(D) Both (II) and (III) above

1 Mark

ANSWER:

B is correct.

Beta of the stock = 0.86

The amount by which a security's return differs from the normal return for its level of risk is the vertical distance of the security's plot on the graph from the SML. This vertical distance is called alpha (α). Each security's ex-ante alpha is calculated as the difference between the expected return and the required return implied by the SML. i.e.,

$$a = E(r_i) - R(r_i)$$

$$E(r_i) = 11\%$$

$$R(r_i) = R_f + b(R_m - R_f) = 7\% + 0.86(12\% - 7\%) = 11.3\%$$

$$a = 11\% - 11.3\% = -0.3\%$$

If the alpha is negative, the stock is overpriced and plots below the SML. The stock's return is less than the normal return by 0.3%. Therefore statement (II) is true and statements (I) and (III) are not true. Hence (B) is the answer.

QUESTION 2 - PORTFOLIO MANAGEMENT

Other things remaining the same, if the standard deviation of the returns on the market index increases by 25%, the standard deviation of the returns on security 'X' increases by 20%, and the covariance between the security 'X' and the market index decreases by 15%, the systematic risk of the security

- (A) Increases by 46%
- (B) Increases by 54%
- (C) Decreases by 46%
- (D) Decreases by 54%

1 Mark

ANSWER:

D is correct.

$$\begin{aligned} \text{SR} &= \beta^2 \sigma^2 m \\ &= (\beta \sigma m)^2 \\ &= \left(\frac{\text{Cov}}{\sigma^2 m} \times \sigma m \right)^2 \\ &= \left(\frac{\text{Cov}}{\sigma m} \right)^2 \rightarrow \text{Old SR} \\ &= \left(\frac{\text{Cov} \times 0.85}{\sigma m \times 1.25} \right)^2 \\ &= 0.46 \times \left(\frac{\text{Cov}}{\sigma m} \right)^2 \end{aligned}$$

New SR = 0.46 × old SR

So, SR fall by 54%

QUESTION 3 - CORPORATE VALUATION

The market values of three divisions of a high-technology firm during the year 2005-06 is given below:

Division	Beta	Market Value
Personal Computers	1.60	Rs.100 lakh
Software	2.00	Rs.150 lakh
Computer Mainframes	1.20	Rs.250 lakh

Further the company had earnings of Rs.5.00 per share and paid out 40% of its earnings as dividends in 2005-06. The growth rate in earnings and dividends was estimated at 6% and is expected to continue in the future. The risk free rate of return is 7.5% and the return from the market is 12%. If during the year 2006-07, the company is planning to divest its software business, the growth rate is expected to rise to 10%, and the market value of the software unit is equally distributed between the other two units, what would be the change in the price of the share in 2006-07 over 2005-06?

- (A) - Rs.24.97
- (B) - Rs.37.34
- (C) - Rs.40.87
- (D) Rs.40.64

3 Marks

ANSWER:

D is correct.

Beta during 2005-06 = 1.52

Required rate of return, $k_e = R_f + b(R_m - R_f) = 7.5\% + 1.52(12\% - 7.5\%) = 14.34\%$

Price of the stock = 25.42

During the year 2006-07, if the company divests its software division and equally distributes the cash between other two units,

Beta during 2005-06 = 1.34

Required rate of return, $k_e = R_f + b(R_m - R_f) = 7.5\% + 1.34(12\% - 7.5\%) = 13.53\%$

Price of the stock = 66.06

Therefore increase in the price of the stock is Rs.40.64.

Hence (D) is the answer.

QUESTION 4 - ALTERNATIVE INVESTMENT

Given below is the data regarding five similar residential properties:

Property	NOI (Rs.)	Market value (Rs.)
A	40,000	6,90,000
B	36,000	6,60,000
C	42,000	7,00,000
D	38,000	6,70,000
E	45,000	7,30,000

If the market extraction method is used to derive the capitalization rate, the market value of a similar property whose NOI is Rs.55,000 is

- (A) Rs. 8,57,558
- (B) Rs. 9,45,667
- (C) Rs. 9,89,445
- (D) Rs.10,45,557

2 Marks

ANSWER:

B is correct.

According to the market extraction method, capitalization rate is computed as follows:

Property (1)	NOI (Rs.) (2)	Market value (Rs.) (3)	NOI/Market value (%) (4)
A	40,000	6,90,000	5.80
B	36,000	6,60,000	5.45
C	42,000	7,00,000	6.00
D	38,000	6,70,000	5.67
E	45,000	7,30,000	6.16
Capitalization rate = Average of Col (4)			5.816

Now market value of a similar property whose NOI is Rs.55,000 is:

= 9,45,667

Hence (B) is the answer.

QUESTION 5 - BOND VALUATION

Following are the yields on zero-coupon bonds as on 1.01.2007:

Maturity	Interest rate (%)
1.01.2008	10.88
1.01.2009	9.95
1.01.2010	9.97

If it is assumed that the pure expectations theory for the term structure of interest rates holds good, and the bonds are equally risky, the implied 1-year rate on 1.01.2009 will be

- (A) 9.00%
- (B) 9.95%
- (C) 10.01%
- (D) 10.78%

3 Marks

ANSWER:

C is correct.

Given

$$R_{02} = 0.0995$$

$$R_{03} = 0.0997$$

Now implied one-year rate two years from now can be computed.

Implied one-year rate two years from now ($f_{2,3}$)

$$= (\text{Bigger factor} / \text{Smaller factor}) - 1$$

Hence (C) is the answer.

QUESTION 6 - BOND VALUATION

You own government bonds with a face value of Rs.20 lakh. The bonds have remaining term to maturity of 6 years and 3 months from today and have a coupon rate of 12%, payable semi-annually. The next coupon will be paid in three months from now. Currently the yield to maturity of these bonds is 6% p.a. compounded semi-annually. How much are the bonds worth today?

- (A) Rs.26.00 lakh
- (B) Rs.26.76 lakh
- (C) Rs.27.16 lakh
- (D) Rs.27.76 lakh

3 Marks

ANSWER:

B is correct.

First find the value the bond as of 3 months from today and then discount this value back to today. In 3 months we will receive Rs.1.2 lakh. Including that initial payment, which need not be discounted, the value of our bond in 3 months is:

$$\begin{aligned} &= 1.2 + 1.2 \times PVIFA_{(3\%, 12)} + 20 \times PVIF_{(3\%, 12)} \\ &= 1.2 + 1.2 \times 9.954 + 20 \times 0.701 \\ &= \text{Rs.27.16 lakh} \end{aligned}$$

Now we need to discount this value back half a period.

The value of the bond is Rs.26.76 lakh.

Hence (B) is the answer.

QUESTION 7 - DERIVATIVES

An option writer writes a 6-month naked call option on a stock at a premium of Rs.13 and the strike price of Rs.225. The prevailing market price of the stock is Rs.210. If on the expiration day the price of the stock is Rs.220, then the profit/loss to the option writer will be:

- (A) Rs. 7
- (B) Rs. 3
- (C) Rs.10
- (D) Rs.13.

1 Mark

ANSWER:

D is correct.

An option writer who writes a call option has an obligation to sell whereas the buyer or the holder has the option to buy. A call option will be exercised by the buyer only when the price of the stock on the expiration day is more than the strike price of the call option. In the given case as the price of the stock on the expiration day is less than the strike price, the option holder will not exercise the option and pays the premium of the option to the writer. Hence, the gain to the writer will be premium which in this case is Rs.13.

Hence (D) is the answer.

QUESTION 8 - EQUITY

The capital employed by the Majestic Industries is Rs.120 lakh (equity Rs 80 lakhs and long-term debt 40 lakhs). The cost of equity and cost of debt for the firm happens to be 18% and 15% respectively. Firm has a marginal tax rate of 25%. The net profit made by the company during the year is Rs.30 lakh. The Economic Value Added of the firm is:

- (A) Rs. 5.72 lakh
- (B) Rs.12.23 lakh
- (C) Rs.15.58 lakh
- (D) Rs.18.66 lakh

1 Mark

ANSWER:

C is correct.

Post tax Cost of Debt (k_d)	= 15(0.75)
	= 11.25%
Cost of Equity (k_e)	= 18%
Weight of Debt (w_d)	= 40/120
	= 0.33
Weight of Equity (w_e)	= 80/120
	= 0.67
Cost of Capital (k_c)	= ($w_d \times k_d$) + ($w_e \times k_e$)
	= (0.33 x 11.25) + (0.67 x 18)
	= 3.71 + 12.06
	= 15.77%.
Capital Employed	= 120 lakhs
Capital Charge	= 120 x 15.77%
	= 18.92 lakhs
Net Profit	= 30 lakhs
Interest Expense	= 40 lakhs x 15%
	= 6 lakhs
Post tax Interest Expense	= Interest Expense(1-t)
	= 6(0.75)
	= 4.5 lakhs
NOPAT	= Net Profit + Post tax Interest Expense
	= (30 + 4.5) lakhs
	= 34.5 lakhs
EVA	= NOPAT – Capital Charge
	= (34.5 – 18.92)
	= 15.58 lakhs

THEORY

QUESTION 9 - MUTUAL FUNDS

Which of the following statements is **not true** with respect to the mutual funds?

- (A) Net Asset Value (NAV) represents the fair value of a unit of a mutual fund scheme
- (B) The units of closed-ended funds are generally not redeemable at their NAV
- (C) The NAV and the price at which the units of mutual funds are traded in secondary market are not the same
- (D) Open-ended mutual fund units can be traded just like a listed share.

1 Mark

ANSWER:

D is correct.

Open-ended mutual fund units are not listed on the exchange. Hence they cannot be traded like shares. Statement (D) is not true.

As the intrinsic value of the security represents the fair value of the security, the Net Asset Value (NAV) represents the fair value of a unit in a mutual fund. Statement (A) is true.

The shares of closed-ended funds are not redeemable at their NAV as the open-ended funds. On the other hand, these shares are traded in secondary market on stock exchanges at market prices that may be above or below their NAV. Therefore the NAV and the price at which the units of mutual funds are traded in secondary market need not be always equal. Statement (B) & (C) are true.

Hence (D) is the answer.

QUESTION 10 - BOND VALUATION

Consider the following bonds and portfolios:

- I. A 19-year corporate bond with coupon 8% and face value Rs.10,000 currently selling at par.
- II. A perpetual bond.
- III. A 20-year zero-coupon bond with face value Rs.1,00,000.
- IV. A portfolio with Rs.1,000 invested in Bond I and Rs.12,000 invested in Bond III.

If the yield curve is at 8%, which of the following represents the correct order of the bonds and portfolios when ranked by increasing durations?

- (A) (I), (II), (III) and (IV) above
- (B) (II), (IV), (I), and (III) above
- (C) (I), (II), (IV), and (III) above
- (D) (III), (I), (IV), and (II) above

2 Marks

ANSWER:

C is correct.

Class Explanation

QUESTION 11 - EQUITY

Which of the following statements is/are **true** with respect to support and resistance lines?

- I. New highs are reached after a resistance line is penetrated and new lows follow penetration of a support line.
- II. Prices are said to be remain in a congestion zone as long as they fluctuate in narrow ranges within a support and resistance level.
- III. Once a support line is breached, it becomes irrelevant.

- (A) Only (I) above
(B) Only (II) above
(C) Only (III) above
(D) Both (I) and (II) above

1 Mark

ANSWER:

D is correct.

New highs are reached after a resistance line is penetrated and new lows follow penetration of a support line. Statement (I) is true.

Prices are said to be remain in a congestion zone as long as they fluctuate in narrow ranges within a support and resistance level. Statement (II) is true.

IV. Once a support line is breached, it becomes a resistance. Statement (III) is not true.

Hence (D) is the answer.

QUESTION 12 - PORTFOLIO MANAGEMENT

Which of the following forms of market efficiency suggests that conclusion and opinions drawn by analysts based on publicly available information is also reflected in stock prices?

- (A) Weak form
- (B) Semi-strong form
- (C) Strong form
- (D) Near strong form

1 Mark

ANSWER:

B is correct.

As per weak form stock price exhibits random walk. Under semi strong form the publicly held information is factored into current stock prices. The super strong form of market efficiency suggests that the confidential information available to select groups like the management, finances and the stock exchange officials is also of no use in obtaining abnormal returns. Hence (B) is the answer.