2/11

2703N1129

Candidate's Seat No :_____

M.Sc. Sem.-3 Examination

503

AMS

Time : 2-30 Hours] **March-2025** **[Max. Marks : 70**

Instructions: All questions are compulsory. Use of non-programmable scientific calculator is allowed.

Q.1 **(a)** Write a brief note on NPV and IRR formula and explain it with a suitable example. **(07)**

(b) Consider an investment that has the following expected cash flows: **(07)**

Year	Cash Flows (Rs.)
Today	-10,000
1	1,000
2	1,000
3	9,000

What is the net present value and profitability index on this investment?

OR

(a) Explain with suitable example the Principal of Consistency. **(07)**

(b) Calculate the following cash flow for a project. **(07)**

Year	**Net cash flows (Rs.)**
0	-100
1	10
2	60
3	80

Find out the modified internal rate of return for the project. The project cost of capital is 10%.

Q.2 **(a)** Explain in brief the Macaulay duration of the bond and write an expression that establishes the relation between Macaulay duration and Modified duration of the bond. **(07)**

(b) 5-year bond with Rs.1000 face value and an annual coupon rate of 4%. Current market rate of interest is 4.5%. Macaulay duration is 4.63 years. Calculate the Modified Macaulay duration. **(07)**

OR

(a) Explain in detail: The Theory of Expectations. **(07)**

(b) The price of a Rs.1,000 par bond carrying a coupon rate of 8 percent and maturing after five years is Rs.1020. **(07)**

a) What is the approximate YTM?

b) What will be the realized YTM if the reinvestment rate is 7 percent?

Q.3 **(a)** Find Treynor Ratio and explain which manager is preferable and why? **(07)**

Managers	**Average Annual Return**	**Beta**
Manager A	10%	0.90
Manager B	14%	1.03
Manager C	15%	1.20

(b) Write detailed theory on: The Capital Asset Pricing Model (CAPM) **(07)**

(P.T.O)

OR

(a) Explain Security Market Line (SML) and Capital Market Line (CML) with its graphical representation. **(07)**

(b) Explain the Markowitz theory indicating its assumptions, Efficient Portfolio, Efficient Frontier, Optimal Portfolio, and the limitations of the theory. **(07)**

Q.4

(a) Derive the Black-Scholes-Merton formula for a European put option by using the put-call parity formula. **(07)**

(b) Consider a call/put option on a non-dividend paying stock where the current stock price is \$50, the strike price \$55, the risk-free interest rate is 5% per annum with continuously compounding, the time to maturity is 20 weeks and volatility is 35%. Find the Gamma of call/put option. **(07)**

OR

(a) In usual notations explain and derive the derivative price formula by the method of Replicating portfolio. Also, explain delta hedging. **(07)**

(b) Using the following data, compute the price of the associated European call option by Black-Scholes formula. $S_0 = 1500, X = 1650, r = 0.065, T = 6$ month, $\sigma = 0.30$. **(07)**

Q.5 Attempt any **SEVEN** out of **TWELVE:** **(14)**

(1) What is accrued interest?

(2) Explain: Diversification

(3) What is Present Value and Future Value for an Annuity?

(4) State interpretation of Profitability Index.

(5) Define: Efficient Frontier of a portfolio

(6) Define: Sharpe Ratio

(7) Define: Term Structure of Interest Rate

(8) Define: Minimum Variance Portfolios

(9) According to Markowitz, Investor attitudes toward portfolio depends exclusively on (i) _____ (ii) _____

(10) Define: Implied Volatility

(11) Write formula for Vega.

(12) State the difference between Forwards and Futures contracts.

**** ****