

2020

**ECONOMICS — HONOURS**

**Paper : DSE-B-2**

**(Financial Economics)**

**Full Marks : 65**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**Group - A**

1. Answer **any ten** questions :

- (a) A person keeps ₹ 4,500 in each of investment options,  $I_1$  and  $I_2$ , for 5 years.  $I_1$  provides 8% simple interest rate per annum where as  $I_2$  provides 6% interest rate compounded yearly. What will be the maturity values of these two investments? 2
- (b) Suppose, you got ₹ 1,070 on maturity of a deposit of ₹ 1,000 for one year. If the inflation rate for that year was 5%, what was the rate of interest that you got actually on your deposit? 2
- (c) Differentiate between Bid price and Ask price of a bond. 2
- (d) What is yield curve? 2
- (e) Determine the present value of a perpetuity that pays ₹ 7,200 per year with 15% interest rate. 2
- (f) How could a risk-averse individual minimize risk of portfolio return when there are  $n$  mutual funds that are (i) uncorrelated, (ii) positively correlated? 1+1
- (g) If the spot rates for 1 and 2 years are  $S_1 = 6.3\%$  and  $S_2 = 6.9\%$ , what is the forward rate  $f_{12}$ ? 2
- (h) If the premium on a call option has declined recently, does this decline indicate that the option is a better buy than it was previously? 2
- (i) State the one-fund theorem. 2
- (j) What is the difference between simple and compound interest? 2
- (k) What is a commercial paper? 2
- (l) What is amortization? 2
- (m) Define price-yield curve. 2
- (n) State Forward price formula. 2
- (o) Define Debt Equity Ratio. 2

**Please Turn Over**

**Group - B**

2. Answer *any three* questions.

(a) (i) Consider the following informations for two assets :

<u>Asset</u>	$\bar{r}$	$\sigma$	
A	12%	20%	$\sigma_{AB} = 0.01$
B	15%	18%	

A portfolio is formed with weights  $\omega_A = 0.2$  and  $\omega_B = 0.8$ .

Calculate the mean and variance of the portfolio.

(ii) Show the feasible set of two assets in a diagram. (1+2)+2

(b) Discuss the factors that affect stock option prices. 5

(c) Explain the dividend payment process of corporates. 5

(d) State and prove the portfolio diagram lemma. 5

(e) Two stocks are believed to satisfy the two-factor model

$$r_1 = \alpha_1 + 2f_1 + f_2$$

$$r_2 = \alpha_2 + 3f_1 + 4f_2$$

In addition, there is a risk-free asset with a rate of return of 10%. It is known that  $\bar{r}_1 = 15\%$  and  $\bar{r}_2 = 20\%$ . What are the values of  $\lambda_0$ ,  $\lambda_1$  and  $\lambda_2$  for this model? 5

**Group - C**

Answer *any three* questions.

3. Assume that the expected rate of return on the market portfolio is 23% and the risk-free return is 7%. The standard deviation of the market is 32%. Assuming that the market portfolio is efficient.

(a) Derive the equation of the capital market line. Interpret the slope of the line.

(b) What will be the standard deviation of this position if an expected return of 39% is desired?

(c) If you invest ₹ 600 in the risk-free asset and ₹ 1,400 in the market portfolio, how much money should you expect to have at the end of the year?

(d) Consider an asset with expected pay-off ₹ 1,000 and covariance of 0.154 with the market. Determine the current value of the asset. (2+2)+1+2+3

4. What is futures? How could you create a synthetic futures contract with purchase of a European call option and sale of a European put option, having same exercise price and same expiration date? 2+8
  5. 'The CAPM is derived directly from the condition that the market portfolio is a point on the edge of the feasible region that is tangent to the capital market line.'— Discuss the statement. 10
  6. Explain three standard explanations (or theories) for the Term Structure. 10
  7. Show that points on the efficient frontier can be characterised by an optimisation problem, formulated by Markowitz. 10
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