

N. B. : 1. All questions are **compulsory**.

2. **Figures** to the right indicate **full marks**.

3. Attempt **any four** sub questions from **question no. 1**.

4. Attempt **any two** sub questions from **question nos.2 to no.5**.

5. **Use of non-programmable calculator is permitted.**

1.
 - a) Explain the term “Artificial variable” and its use in Linear Programming Problem (LPP). [3]
 - b) Explain the construction of Gomorian constraint in Integer Programming Problem (IPP). [3]
 - c) Using random numbers 82, 63 and 49, generate 3 random observations from Uniform distribution (0, 10). [3]
 - d) Briefly explain the factors influencing the capital market. [3]
 - e) Explain the term American option. [3]
 - f) What is Hedging? Explain its need. [3]

2.
 - a) State the simple algorithm for solving LPP. [6]
 - b) If non negativity condition is not applicable to at least one of the variables of L.P.P. then how would you proceed to find optimal solution using simplex method? [6]
 - c) Write a dual of given L.P.P. [6]

Max $Z = 4x + 5y$
 Such that $2x + 3y \leq 8$
 $x + 5y \leq 12$
 $x, y \geq 0$

3.
 - a) Describe the graphical method of solving IPP. [6]
 - b) State the branch and bound method of solving IPP. [6]
 - c) Use branch and bound method to solve the IPP. [6]

Maximize $Z = 4x_1 + 3x_2$
 Subject to the constraints $5x_1 + 4x_2 \leq 30$
 $x_1 \leq 4$
 $x_1, x_2 \geq 0$ and are integers.

4. a) Describe : [6]
(i) Mid-square method
(ii) The multiplicative congruential method with the help of suitable examples.
- b) Discuss the role of each of the following for investment in securities market (i) Beta value of stock, (ii) Earning per share (EPS). [6]
- c) What is Simulation? State advantages and disadvantages of simulation technique. [6]

- Q.5] a) Explain the concept of forward market. How the future market is better than forward market? How information on open interest helps the investors? [6]
- b) Explain the concept of Arbitrage with suitable example. [6]
- c) Explain the term internal Rate of Return (I.R.R.). How does it help investor to reject or accept investment proposal? [6]