School of Computing Science and Engineering
Bachelor of Technology in Computer Science and Engineering
Mid Term Examination - May 2024

Duration : 90 Minutes
Max Marks : 50

Sem VI - E2UC511T - Operational Research

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1) What is feasible solution? — K2 (2)

2) Discuss simplex method with an example. — K1 (3)

3) Write dual of following problems:Max z =x1+x2 ,s/t 2x1+ x2=5 ; 3x1-x2 = 6 ; x1,x2>=0 — K2 (4)

4) A furniture dealer deals only two items viz., tables and chairs. He has to invest Rs.10,000/- and a space to store atmost 60 pieces. A table cost him Rs.500/– and a chair Rs.200/–. He can sell all the items that he buys. He is getting a profit of Rs.50 per table and Rs.15 per chair. Formulate this problem as an LPP, so as to maximize the profit. — K2 (6)

5) Write Phase I for the following problem and then solve to show that the problem has no feasible solution. Max z =2x1+5x2 s/t 3x1+2x2 ≥12; 2x1+x2≤4; x1 & x2 ≥0 — K3 (6)

6) Solve the following LPP by graphical method:Maximize Z = 2 x1 +5x2 ; subject to the conditions x1+ 4x2 ≤ 24,3x1+x2 ≤ 21 ; x1+x2 ≤ 9and x1, x2 ≥ 0 — K3 (9)

7) A dietician mixes two types of food in such a way that the vitamin contents of the mixture contain at least 8 units of vitamin A and 10 units of vitamin C. Food X contains 2 units/kg of vitamin A and 1 unit/kg of vitamin C while food Y contains 1 unit/kg of vitamin A and 2 units/kg of vitamin C. One kg of food X costs Rs. 5 whereas one kg of food Y costs Rs. 7. Determine the minimum cost of such a mixture. — K4 (8)

8) Solve the following LPP using Two-Phase Method: Min z =40x1+24 x2 s/t 20x1+50x2≥ 4800; 80x1+50x2≥7200; x1&x2≥0 — K4 (12)

OR

Solve the following LPP using graphical method: 16. Max z =8000x1+7000x2 s/t 3x1+x2≤ 66; x1+x2≤45; x1≤20;x1&x2≥0 — K4 (12)