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QP CODE: 22101572

Reg No :

Name :

**B.Sc DEGREE (CBCS) IMPROVEMENT / REAPPEARANCE EXAMINATIONS ,
MAY 2022**

Fourth Semester

B.Sc Computer Science Model III

Core Course - CC4CRT03 - COMPUTER AIDED OPTIMIZATION TECHNIQUES

2017 Admission Onwards

7EA1BF7B

Time: 3 Hours

Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. What is Operations Research ?
2. What are the components of an LPP?
3. Write the standard form of LPP.
4. Explain the term surplus variable in LPP.
5. Which are the different types of transportation problem?
6. What is Least Cost method?
7. What is prohibited assignment problem?
8. What are the principal assumptions made while dealing with sequencing problems?
9. What do you mean by no passing rule in sequencing problems?
10. Define max flow- mini cut.
11. What is earliest start time and earliest finish time?
12. What is free float?

(10×2=20)

Part B

*Answer any **six** questions.*





Each question carries 5 marks.

13. What are the advantages and disadvantages of OR models ?
14. Explain degeneracy and its implications in LPP and how it is solved?
15. Prove that the set of feasible solutions to an LPP is a convex set.
16. A timber company ships pine flooring to three building supply houses from its mills in bhunya,mondi and pigg's peak.
Determine the best transportation schedule for the data given below using the north west corner method.

	SUPPLY HOUSE 1	SUPPLY HOUSE 2	SUPPLY HOUSE 3	MILL CAPACITY(TONS)
BHUNYA	3	3	2	25
MONDI	4	2	3	40
PIGG'S PEAK	3	2	3	30
SUPPLY HOUSE DEMAND(TONS)	30	30	35	95

17. Explain the steps of assignment problem with example.
18. Explain Shortest Route Problem.
19. There are 7 jobs each of which has to go through the machines A and B in the order AB. The processing time (in hours) are given below:
Determine a sequence of these jobs that will minimize the total elapsed time T. Also find the idle time for machine A and machine B.

Job	1	2	3	4	5	6	7
Machine A	3	12	15	6	10	11	9
Machine B	8	10	10	6	12	1	3

20. Solve graphically,
Maximize $Z=8X_1 + 6X_2$
Subject to,
 $4X_1 + X_2 \leq 60$
 $2X_1 + 4X_2 \leq 48$
 $X_1, x_2 \geq 0$
21. Highlight the difficulties in using network techniques.

(6×5=30)





Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. Explain about the opportunities and shortcomings of OR ?
23. A company manufactures two products P1 and P2. The company has two types of machines A & B. Product P1 takes 2 hours on machine A and 4 hours on machine B, whereas product P2 takes 5 hours on machine A and 2 hours on machine B. The profit realized on the sale of one unit of products P1 is Rs.3 and that of product P2 is Rs.4. If machine A & B can operate 24 & 16 hours per day respectively, determine the weekly output for each product in order to maximize the profit. Use simplex method to solve [assume a 5 day week].
24. Four persons A, B, C & D are to be assigned four jobs 1, 2, 3 & 4. The cost matrix is given as under, find the proper assignment.
25. Explain the two types of Network techniques

(2×15=30)

