25U203S (Pages: 2) Name: .....

Reg.No: .....

SECOND SEMESTER B.C.A. DEGREE EXAMINATION, APRIL 2026

(CBCSS - UG)

CC19UBCA2C04 - OPERATIONS RESEARCH

(Computer Application - Complementary Course)

(2019 to 2023 Admissions - Supplementary)

Time : 2.00 Hours Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

Answer ***all*** questions. Each question carries 2 marks.

1. What is Operations Research?
2. What are the categories in the models by the extent of generality.
3. Give two conditions to be followed while converting to standard form of LPP.
4. Define the degenerate solution.
5. Name two methods that are employed for the solution of linear programming problems having artificial variables.
6. Find an initial basic feasible solution to the following transportation problem using North-West Corner Method.

	D_1	D_2	D_3	D_4	Availability
O_1	12	8	2	10	28
O_2	16	18	4	14	32
O_3	8	6	12	4	10
Requirements	12	20	30	8	

7. What you mean by prohibited transportation problem?
8. Write the mathematical formulatio of a general assignment problem.
9. What you mean by prohibited assignment problem?
10. Define network.
11. When an activity in a network diagram is said to be critical?
12. What do you mean by *Idle time on a machine*?

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer ***all*** questions. Each question carries 5 marks.

13. Discuss the fundamental theorem of duality and simplex method.

14. Find an initial basic feasible solution to the following transportation problem using Vogel's Approximation Method.

	D_1	D_2	D_3	D_4	Availability
O_1	22	26	34	28	500
O_2	32	36	28	20	600
O_3	42	48	26	20	800
Requirements	400	450	550	500	

15. Consider the following transhipment problem with two sources and two destinations, the costs for shipment in rupees is given below. Determine an initial basic feasible solution.

	Source 1	Source 2	Destination 1	Destination 2	Supply
Source 1	0	1	6	2	4
Source 2	1	0	8	8	5
Destination 1	0	7	0	3	----
Destination 2	1	0	1	0	----
Demand	----	----	3	6	

16. Solve the following assignment problem, to assign the jobs A, B, C, D to four workers.

	I	II	III	IV
A	10	25	15	20
B	15	30	5	15
C	35	20	12	24
D	17	25	24	20

17. Explain the travelling salesman problem.

18. Explain the difference between CPM and PERT.

19. Discuss the processing of 2 jobs through k machines.

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any ***one*** question. The question carries 10 marks.

20. Explain briefly the applications of operations research.

21. Find the optimal solution to the following transportation problem.

	A	B	C	D	Supply
I	3	7	6	4	50
II	2	4	3	2	20
III	4	3	8	5	30
Demand	30	30	20	20	

(1 × 10 = 10 Marks)

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