



019322

K19U 2075

Reg. No. :

Name :

V Semester B.A./B.Sc./B.Com./B.B.A/B.B.A.T.T.M./B.B.A.R.T.M./B.B.M./
B.T.T.M./B.C.A./BBA (AH)/B.S.W./B.A.Afsal UI Ulama

Degree (CBCSS- Reg./Sup./Imp.) Examination, November-2019

(2014 Admn. Onwards)

OPEN COURSE

5D04 MAT : LINEAR PROGRAMMING

Time : 2 hrs

Max. Marks : 20

SECTION - A

Answer **all** questions. Each question carries **1** mark. (4×1=4)

- 1 Define a linear programming problem.
2. What do you mean by loop in a transportation problem?
3. Name any three methods for obtaining an initial basic feasible solution to a transportation problem.
4. When do you say that a basic solution is degenerate?

SECTION - B

Answer any **6** questions. Each question carries **2** marks. (6×2=12)

5. What are the major steps in the solution of a linear programming problem by graphical method ?
6. Explain canonical form of an L.P.P.

P.T.O.



7. Reduce the following linear programming problem to the standard form determine $x_1 > 0, x_2 > 0, x_3 > 0$ so as to maximize $Z = 2x_1 + x_2 + 4x_3$ subject to the constraints $-2x_1 + 4x_2 \leq 4, x_1 + 2x_2 + x_3 \geq 5, 2x_1 + 3x_3 \leq 2$.
8. Obtain all basic solutions to the following system of linear equations $x_1 + 2x_2 + x_3 = 4, 2x_1 + x_2 + 5x_3 = 5$
9. Explain tabular representation of a transportation problem
10. Obtain an initial basic feasible solution to the following transportation problem using North West corner method

	D	E	F	G	available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Requirement	200	225	275	250	

11. Explain various steps in least cost method.
12. Solve using Vogel's approximation method.

	D ₁	D ₂	D ₃	D ₄	Supply
S ₁	3	7	6	4	5
S ₂	2	4	3	2	2
S ₃	4	3	8	5	3
Demand	3	3	2	2	

13. Briefly explain MODI method.



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SECTION - C

Answer any **one** question. Each question carries 4 marks. (1×4=4)

14. a) Define standard form and canonical form.
b) Solve graphically

$$\text{Minimize } Z = 20x_1 + 10x_2$$

$$\text{subject to } x_1 + 2x_2 \leq 40, 3x_1 + x_2 \geq 30, 4x_1 + 3x_2 \geq 60 \quad x_1, x_2 \geq 0$$

15. A company has 4 jobs to be done. The following matrix shows the cost of assigning i^{th} job to j^{th} machine. Assign the job so as to minimize the total cost.

	M_1	M_2	M_3	M_4
J_1	5	5	10	2
J_2	7	4	2	3
J_3	9	3	5	10
J_4	7	2	6	7