

FACULTY OF MANAGEMENT**M.B.A. III – Semester (CBCS) Examination, December 2018 / January 2019****Subject: Operations Research****Paper Code – MB – 303****Time: 3 Hours****Max.Marks: 80****PART – A (5x4 = 20 Marks)****[Short Answer Type]****Note: Answer all the questions in not more than one page each.**

- 1 State the assumptions of LPP.
- 2 Economic interpretation of dual.
- 3 What is matrix minimum method?
- 4 Compare PERT and CPM.
- 5 Cost analysis in queuing model.

PART – B (5x12 = 60 Marks)**[Essay Answer Type]****Note: Answer all the questions by using internal choice in not exceeding four pages each.**

- 6 a) Explain the managerial explicabilities and limitations of operations research.

OR

- b) Solve the following LP problem graphically

$$\text{Maximize } Z = 2x_1 + x_2$$

Subject to Constraints

$$(i) x_1 + 2x_2 \leq 10 \quad (ii) x_1 + x_2 \leq 6 \quad (iii) x_1 - x_2 \leq 2 \quad (iv) x_1 - 2x_2 \leq 1 \quad \text{and } x_1, x_2 \geq 0.$$

- 7 a) What is LPP method? Discuss its implications.

OR

- b) Solve the following LPP by simplex method.

$$\text{Max } Z = 4x_1 + 10x_2$$

Subject to $2x_1 + x_2 \leq 50$

$$2x_1 + 5x_2 \leq 100$$

$$2x_1 + 3x_2 \leq 90$$

$$\text{and } x_1, x_2 \geq 0$$

- 8 a) Name two applications of transportation problem and assignment problem. Explain.

OR

- b) A Steel Company has three open hearth furnaces and five rolling mills. The transportation cost (rupees per quintal) for shipping steel furnaces to rolling mills are given in the following table.

	M ₁	M ₂	M ₃	M ₄	M ₅	Supply
F ₁	4	2	3	2	6	8
F ₂	5	4	5	2	1	12
F ₃	6	5	4	7	7	14
Demand	4	4	6	8	8	

What is the optimal schedule?

9 a) What is network analysis? Explain its merits and demerits.

OR

b) A small project considering of eight activities has the following characteristics.

Activity Name	Preceding Activity	Time estimates (in Weeks)		
		Most Optimistic	Most Likely	Most Pessimistic
A	--	2	4	12
B	--	10	12	26
C	A	8	9	10
D	A	10	15	20
E	A	7	7.5	11
F	B&C	9	9	9
G	D	3	3.5	7
H	E, F & G	5	5	5

A) Draw network diagram

B) Determining critical path

C) If a 30-week deadline is imposed.

What is the probability that the project will be finished within the time limit?

10 a) Briefly explain the properties found in competitive games.

OR

b) Reduce the following game by dominance and find the game value.

Player – A

	I	II	III	IV
I	3	2	4	0
II	3	4	3	4
III	4	2	4	0
IV	0	4	0	8
