

19/11/2020.

Code No. 12053

FACULTY OF MANAGEMENT

M.B.A. III – Semester (CBCS) Examination, November 2020

Subject: Operations Research

Paper – MB – 303

Time: 2 Hours

Max.Marks: 80

PART – A

Note: Answer any four questions.

(4x5 = 20 Marks)

- 1 Define Operations Research
- 2 Sensitivity Analysis
- 3 Unbalanced Transportation Problem
- 4 Merge Event
- 5 Balking

PART – B

Note: Answer any four questions.

(4x15 = 60 Marks)

6. Explain the role of Operations Research in Management.

7. Solve the following graphically:

$$\text{Max } Z = 6x_1 + 14x_2$$

$$\text{Subject to Constraints: } 5x_1 + 4x_2 \geq 60$$

$$3x_1 + 7x_2 \leq 84$$

$$x_1 + x_2 \geq 18$$

$$x_1, x_2 \geq 0$$

8. Explain the following terms:

- i) Objective Function
- ii) Artificial Variables

9. Solve the following using simplex method:

$$\text{Max } Z = 50x_1 + 600x_2 + 1200x_3$$

$$\text{Subject fo Constraints: } 2x_1 + 4x_2 + 6x_3 \leq 160$$

$$3x_1 + 2x_2 + 4x_3 \leq 120$$

$$x_1, x_2, x_3 \geq 0$$

10. Describe the assignment problem giving a suitable example. Give two areas of its applications.

11. Solve the following by Vogel's Approximation Method and test its optimality:

		Destination			Total
		W ₁	W ₂	W ₃	
Source	J ₁	4	8	8	56
	J ₂	16	24	13	82
	J ₃	8	16	24	77
	Total	72	102	41	

12. Differentiate between CPM and PERT.

13. The time estimates for PERT Network are given below:

Activity	t _o	t _m	t _p
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

- 1) Find the expected project length.
 - 2) Calculate the Standard Deviation and variance of the project.
 - 3) If the project is due in 19 weeks. What is the probability of completing the project within 19 weeks.
14. Explain the general structure of a queuing system. Briefly explain the applications of queuing theory.

15. Solve the following Game using graphical method:

Player	Player Y				
	X	6	3	-1	0
	3	2	-4	2	-1
