Reg. No. : ....

Name : ....

Fourth Semester M.Com. Degree Examination, March 2021

Elective – Finance/Marketing

Paper IV : CO 244 S – MANAGEMENT OPTIMIZATION TECHNIQUES

(Common for Finance and Marketing)

(2018 Admission Onwards)

Time : 3 Hours

Max. Marks : 75

SECTION – A

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

1. Define linear Programming.

2. What are slack variables?

3. What is a dummy activity?

4. What is unbalanced assignment problem?

5. What is network diagram?

6. What is called the value of a game?

7. What is optimal solution?

8. What is critical path?

9. What is saddle point?

10. What is free float?

<div align="right">(10 × 2 = 20 Marks)</div>

SECTION – B

Answer any **five** questions. **Each** question carries **5** marks.

11. Distinguish between PERT and CPM.

12. State the assumptions of linear programming.

13. Explain the various methods of finding initial feasible solution in transportation problem.

14. Write down the dual of the following problem :

Minimize $Z = 2x_1 + 3x_2$

Subject to :

$x_1 + x_2 \geq 10$
$2x_1 + 3x_2 \geq 24$
$x_1, x_2 \geq 0$

15. Find the initial feasible solution to the transportation by north west corner method

Origin	D1	D2	D3	Supply
O1	2	7	4	5
O2	3	3	1	8
O3	5	4	7	7
O4	1	6	2	14
Demand	7	9	18	

16. Find the optimal solution to the following assignment problem showing the cost for assigning workers to job :

Workers	Jobs		
	X	Y	Z
A	18	17	16
B	15	13	14
C	19	20	21

17. For the following game, find the optimal strategies of A and B and value of the game using principle of dominance.

Player A	Player B			
	B1	B2	B3	B4
A1	7	6	8	9
A2	−4	−3	9	10
A3	3	0	4	2
A4	10	5	−2	0

18. A company uses annually 3200 units of raw material costing Rs. 6 per unit. Placing each order cost Rs. 150 and inventory carrying costs are 25% per year of average inventory values. Compute EOQ.

(5 × 5 = 25 Marks)

SECTION – C

Answer any **two** questions. **Each** question carries **15** marks.

19. Explain the various optimization techniques used for decision making.

20. Draw a network diagram and find the critical path and project duration, assuming that the expected time are normally distributed.

Activity	Days		
	Optimistic	Most likely	Pessimistic
1 – 2	2	5	14
1 – 3	9	12	15
2 – 4	5	14	17
3 – 4	2	5	8
3 – 5	8	17	20
4 – 5	6	9	12

21. Solve the L.P.P using simplex method :

Minimize $Z = 3x_1 + 8x_2$

Subject to :

$x_1 + x_2 = 200$; $x_1 \le 80$, $x_2 \ge 60$

$x_1, x_2 \ge 0$.

22. Solve the following transportation problem whose cost matrix availability at each and requirement at each warehouse are given as follows by using MODI method.

Plant	Warehouse				
	W1	W2	W3	W4	Availability
P1	190	300	500	100	70
P2	700	300	400	600	90
P3	400	100	600	200	180
Requirement	50	80	70	140	

(2 × 15 = 30 Marks)