Reg. No ..... Name **25P2068**

M. COM DEGREE END SEMESTER EXAMINATION - APRIL 2025

SEMESTER 2 : COMMERCE

COURSE : **24P2COMT10 : OPERATIONS MANAGEMENT TECHNIQUES**

(For Regular - 2024 Admission)

Time : Three Hours Max. Weights: 30

PART A

Answer any 8 questions **Weight: 1**

1. What is meant by fair game? (U)
2. An animal feed company must produce at least 200 kgs of a mixture consisting of ingredients X1 and X2 daily. X1 costs Rs. 3 per kg and X2 Rs. 8 per kg. No more than 80kg of X1 can be used atleast 60 kgs of X2 must be used. Formulate the mathematical model to the problem. (A)
3. What is feasible region? (A)
4. What is iconic model? (U)
5. Mention any two practical purpose of LPP (U)
6. What is Big-M method? (R)
7. What is Interfering Float? (R)
8. What is Expected Monetary Value (EMV)? (U)
9. What do you mean by Management Opitmisation Techniques? (U)
10. What is MODI Method? (U)

(1 x 8 = 8)

PART B

Answer any 6 questions **Weights: 2**

11. Draw a network for the following project:
    a) A is the starting activity event and K is the end activity.
    b) J is the successor to F
    c) C and D are successors to B and B is the successor to A
    d) D is preceding activity event to G.
    e) E and F occur after C (Cr)
    f) E precedes F
    g) G precedes H
    h) H precedes I
    i) F restraints the occurrence of H
    j) K succeeds event J and I.
12. What do you understand by simplex method? (U)
13. Show that the solution to the following LPP is unbounded.
    Max: $Z = 2X_1 + 3X_2$
    St $X_1 - X_2 \leq 2$;
    $X_1 + X_2 \geq 4$; (A)
    $X_1 , X_2 \geq 0$
14. Outline the phases of a Systematic O.R (An)
15. The cost of manufacture of the product at different production shops are: (A)

Shop	Variable cost	Fixed cost
A	14	7000
B	16	4000
C	15	5000

Find the optimum quantity to be supplied from each shop to different warehouses at minimum total cost.

16. Can an assignment ever be a non – degenerate transportation problem? Explain. (A)

17. What are the characteristics of linear programming problems? (An)

18. What are the particulars of a competitive game? (U)

(2 x 6 = 12)

PART C

Answer any 2 questions **Weights: 5**

19. Define :
a) Competitive game
b) Pay off matrix
c) Pure and mixed strategies
d) Saddle point (A)

20. Solve the following assignment problems showing costs for solving assignment of 3 men to 3 jobs (A)

	men		
job	A	B	c
1	2	6	2
2	1	4	1
3	5	3	8

21. A project consists of eight activities by symbols A, B, C, D, E, F, G and H. Relationship between the activities are as follows:
The project stars with activity A
When A is completed activities E and B may be started.
Activity F may start when E is completed
Activity C depends for its starts on the completion of F and B
When F is completed activity G may begin
When C is completed D may begin
H may begin when activities G and D are completed and is a final activity. (An)
Expected time (in days) for the activities is given below:

Activity	A	B	C	D	E	F	G	H
Duration (days)	10	9	3	15	5	17	8	7

a) Draw the network denoting activities by arrows and events by circles.
b) Workout the earliest expected time and latest permissible time for each event assuming that the latest occurrence time of last event is same as its earliest occurrence time.
c) Compute the earliest start, latest start, earliest finish and latest finish time for each activity.
d) Determine the critical path

22. Solve (A)

Min. $Z = 4X_1 + 3X_2$
S.t. $2X_1 + X_2 \geq 40$
$X_1 + 2X_2 \geq 50$
$X_1 + X_2 \geq 35$
$X_1, X_2 \geq 0$

(5 x 2 = 10)

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;