D 120020 **(Pages : 4)** **Name.....**

Reg. No.....

SIXTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
MARCH 2025

B.B.A.

BBA6B13—MANAGEMENT SCIENCE

(Admissions Year—2019 Onwards)

Time : Two Hours and a Half Maximum : 80 Marks

Part A

Answer **all** *questions.*

1. What are analogue models ?
2. Explain transportation problem.
3. Explain Hurwitz alpha criterion.
4. What are the nodes in decision tree ?
5. Explain value of the game.
6. What is linear programming problems ?
7. What is optimal solution ?
8. What do you mean by mixed strategy ?
9. Explain pay-off.
10. What is node in network diagram ?
11. What is decision tree ?
12. What is iconic model ?
13. Explain balanced transportation problem.

Turn over

14. Name any *two*-optimality test in transportation problem.

15. What is slack ?

(15 × 2 = 30 Maximum ceiling 25 marks)

Part B

Answer **all** *questions.*

16. Discuss the limitations of PERT and CPM.

17. Discuss the assumptions of game theory.

18. Explain the terms : (a) Expected Monetary value ; and (b) Expected opportunity loss criteria.

19. Discuss the basic assumptions of Linear Programming Problem.

20. Draw a network diagram from the following activities and find the critical path.

Activity	:	1 – 2	1 – 3	1 – 4	2 – 5	3 – 5	4 – 6	5 – 6
Duration	:	2	4	3	1	6	5	7

21. A company manufactures two products A and B. Each unit of B takes twice as long to produce as one unit of A and if the company were to produce only A it would have time to produce 2000 units per day.

The availability of the raw material is enough to produce 1500 units per day of both A and B together. Product B requiring a special ingredient, only 600 units of it can be made per day. If A fetches a profit of 2 per unit and B a profit of 4 per unit, Develop mathematical model of LPP

22. The co-efficient of optimism is 0.4 so the co-efficient of pessimism is 0.6 Select course of action that optimizes profit or minimizes cost using Hurwitz criterion.

Course of action	*Best pay off*	*Worst pay off*
S_1	– 3000	– 3000
S_2	– 1000	– 4000

Suppose a robot building firm plans the following project. Draw the n/w and find the Critical path

23. Draw an economical AOA n/w using the following data :

Job	*Predecessor*	*Job*	*Predecessor*	*Job*	*Predecessor*
A	-	F	A	L	G, H
B	-	G	F	M	J, K, L
C	A	H	D, E	N	J, K, L
D	A	J	G, H	O	K, J
E	B, C	K	G, H		

(8 × 5 = 40, Maximum ceiling 35 marks)

Part C

Answer any **two** *questions.*

24. Solve graphically the following linear programming problem.

Minimize, Z = 20x1+ 10x2

Subject to :

$x_1 + 2x_2 \leq 40$

$3x1 + x2 \geq 30$

$4x1 + 3x2 \geq 60$

$x1, x2 \geq 0.$

25. A Mobile phone dealer finds that the cost of a mobile in stock for a week is Rs. 30 and the cost of a unit shortage is Rs. 70. For one particular model of television the probability distribution of weekly sales is as follows.

Weekly Sales	:	0	1	2	3	4	5	6
Probability	:	0.10	0.10	0.20	0.25	0.15	0.15	0.05

How many units per week should the dealer order ? Also, find EVPI ?

Turn over

26. Determine an initial basic feasible solution to the following transportation problem by using : (a) The least cost method ; and (b) Vogel's approximation method.

Destination

	D_1	D_2	D_3	D_4	*Supply*
S1	1	2	1	4	30
S2	3	3	2	1	30
S3	4	2	5	9	40
Demand	20	40	30	10	

27. Explain the phases of OR.

(2 × 10 = 20 marks)