

SIXTH SEMESTER UG DEGREE EXAMINATION, APRIL 2024
(Regular/Improvement/Supplementary)

BBA

GBBA6B13T: MANAGEMENT SCIENCE

Time: 2 ½ Hours

Maximum Marks: 80

SECTION A: Answer the following questions. Each carries two marks.
(Ceiling 25 Marks)

1. Define Operation Research.
2. What do you mean by transportation table?
3. List any four objectives of network analysis.
4. Comment on Pay Off table.
5. Define optimal solution.
6. What are the limitations of OR?
7. State the advantages of LP.
8. Define Earliest start time.
9. What are Structural coefficients?
10. What is EMV?
11. Define Total Float.
12. Write a note on decision making under competition.
13. What is Optimistic Time Estimate?
14. Define course of action.
15. What is the feasible solution of transportation problem?

SECTION B: Answer the following questions. Each carries five marks.
(Ceiling 35 Marks)

16. Write a note on OR and Modern Business Management.
17. Write down the steps involved in PERT calculations.
18. Draw the event oriented network for the following data:

Events	1	2	3	4	5	6	7
Immediate Predecessors	-	1	1	2, 3	3	4, 5	5, 6

19. Construct the network for the projects consisting of various activities and their precedence relationships as given below:
A, B, C can start simultaneously A < F, E; B < D, C; E, D < G
20. How to obtain Expected Value of Perfect Information? Explain.
21. Write down the steps of Vogel's approximation method.
22. Explain the steps involved in the formulation of mathematical model of Linear programming problem.

23. Find the initial basic feasible solution using North West corner rule.

	D1	D2	D3	D4	Supply
O1	19	30	50	10	7
O2	70	30	40	60	9
O3	40	8	70	20	18
Demand	5	8	7	14	

SECTION C: Answer any two questions. Each carries ten marks.

24. Explain important OR techniques.

25. Anita Electric Company produces two products P1 and P2. Products are produced and sold on a weekly basis. The weekly production cannot exceed 25 for product P1 and 35 for product P2 because of limited available facilities. The company employs total of 60 workers. Product P1 requires 2 man-weeks of labour, while P2 requires one man-week of labour. Profit margin on P1 is Rs. 60 and on P2 is Rs. 40. Formulate this problem as an LP problem and solve that using graphical method.

26. A small project is composed of nine activities whose time estimates are listed in the following table:

Activity	t_0	t_p	t_m
1-2	5	10	8
1-3	18	22	20
1-4	26	40	33
2-5	16	20	18
2-6	15	25	20
3-6	6	12	9
4-7	7	12	10
5-7	7	9	8
6-7	3	5	4

- Find the expected task time and their variance.
- Find critical path and project duration.

27.

Decision (Purchase)	States of Nature	
	Good economic conditions	Poor economic conditions
Apartment building	50,000	30,000
Office building	1,00,000	- 40,000
Warehouse	30,000	10,000

- Find the optimal act using Maxi-Max criteria.
- Find the optimal act using Mini-Max criteria.
- The equal likelihood (or Laplace) criterion.
- The Hurwicz criterion with alpha value of 0.4.

(2 x 10 = 20 Marks)