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Name.....

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2024

(CBCSS—UG)

B.B.A.

BBA 6B 13—MANAGEMENT SCIENCE

(2019 Admission onwards)

Time : Two Hours and a Half

Maximum : 80 Marks

Part A*Answer all questions.*

1. Define operation research.
2. What is network analysis ?
3. What is Dummy Activity ?
4. What is free float ?
5. What is PERT ?
6. What is Decision Theory ?
7. What is critical path ?
8. What is Least Cost Method ?
9. What is laplace criterion ?
10. What is Hurwics alpha criterion ?
11. What is Minimax criterion ?
12. What do you mean by Expected value of perfect information ?
13. What is Scheduling ?
14. Define Risk.
15. What do you mean by pure strategy ?

(15 × 2 = 30, Maximum ceiling 25 marks)

Turn over

Part B*Answer all questions.*

16. What are the phases of operation research ?
17. What are the advantages and disadvantages of linear programming ?
18. What are the objectives of network analysis ?
19. Explain the techniques of operation research.
20. A dealer wishes to purchase a number of fans and sewing machines. He has only Rs. 5,760 to invest and has space atmost for 20 items. A fan cost him Rs. 360 and a sewing machine Rs. 240. His expectation is that he can sell a fan at a profit of Rs. 22 and a sewing machine at a profit of Rs. 18. Assuming that he can sell all the items that he can buy, how should he invest his money in order to maximise his profit ?
21. Explain the importance of game theory.
22. Find the initial feasible solution to the transportation problem by North West Corner rule :

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

23. Draw the network for the project whose activities and their precedence relationship are as given below :

Activities	:	A	B	C	D	E	F	G	H	I
Predecessor	:	-	A	A	-	D	B, C, E	F	E	G, H

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

Part C*Answer any two questions.*

24. Explain different operation research techniques useful in managerial decisions.
25. Solve the following transportation problem :

Warehouse

	W1	W2	W3	W4	Capacity
F1	19	30	50	10	7
F2	70	30	40	60	9
F3	40	8	70	20	18

Requirement 5 8 7 14

26. Solve the following problem :

$$\begin{aligned} \text{Maximize } Z &= 6X_1 + 4X_2 \\ \text{subject to } & -2X_1 + X_2 \leq 2 \\ & X_1 - X_2 \leq 2 \\ & 3X_1 + 2X_2 \leq 9 \\ & X_1, X_2 \geq 0. \end{aligned}$$

27. A project schedule has the following characteristics :

Activity :	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8	7-8	8-10	9-10
Time :	4	1	1	1	6	5	4	8	1	2	5	7

- (1) Construct network diagram.
- (2) Compute T_E and T_L for each event.
- (3) Find EST, LST, EFT and LFT values of all activities.
- (4) Find critical path and project duration.

(2 × 10 = 20 marks)