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Name: .....

Reg. No: .....

**SIXTH SEMESTER B.B.A. DEGREE EXAMINATION, APRIL 2024**

(CBCSS - UG)

(Regular/Supplementary/Improvement)

**CC19U BBA6 B13 – MANAGEMENT SCIENCE**

(B.B.A. - Core Course)

(2019 Admission onwards)

Time: 2.5 Hours

Maximum: 80 Marks

Credit: 4

**Part A** (Short answer questions)

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

1. What is the methodology of OR?
2. What is a constraint?
3. List out any two disadvantages of L.P.P.
4. State the purposes of network analysis
5. Determine the various uses of network techniques for management.
6. Represent successor activity graphically.
7. What is meant by PERT?
8. Discuss any two advantages of PERT and CPM.
9. What do you mean by decision theory?
10. State the meaning of pay off.
11. Discuss Laplace criterion.
12. What is Expected Value of Perfect Information (EVPI)?
13. State any four assumptions of a game.
14. State the meaning of basic feasible solution under transportation problem.
15. Write a note on North West Corner Rule.

**(Ceiling: 25 Marks)**

**Part B** (Paragraph questions)

Answer *all* questions. Each question carries 5 marks.

16. What is the nature of OR?
17. What are the types of models commonly used in OR?
18. Solve graphically.

$$\text{Maximise } Z = 22X_1 + 18X_2$$

$$\text{Subject to } 3X_1 + 2X_2 \leq 48$$

$$X_1 + X_2 \leq 20$$

$$X_1 \geq 0, X_2 \geq 0$$

(1)

**Turn Over**

19. A project consists of six activities (jobs) designated from A to F, with the following relationships.

- (i) A is the first job to be performed
- (ii) B and C can be done concurrently, and must follow A
- (iii) B must precede D
- (iv) E must succeed C but it cannot start until B is completed
- (v) The last operation F is dependent on the completion of D & E

Draw the network diagram

20. Explain the differences between Maximax and Minimax criterion.

21. Discuss Decision tree theory in detail.

22. Find the initial feasible solution to the following transportation problem solved by lowest cost entry method

	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	
F <sub>1</sub>	2	7	4	5
F <sub>2</sub>	3	3	1	8
F <sub>3</sub>	5	4	7	7
F <sub>4</sub>	1	6	2	14
	7	9	18	

23. Solve the following Transportation problem to maximise profit.

Profit in Rs/Unit Distribution					
	A	B	C	D	Supply
1	15	51	42	33	23
Source 2	80	42	26	81	44
3	90	40	66	60	33
Demand	23	31	16	30	

(Ceiling: 35 Marks)

**Part C** (Essay questions)

Answer any *two* questions. Each question carries 10 marks.

24. What is linear programming? Explain its applications in industry and management.

25. A newspaper boy has the following probability of selling magazine.

No. of copies sold	Probability
10	.1
11	.3
12	.4
13	.2

Cost of a copy is 3 Rs. and sale price is 5 Rs. He cannot return magazine but each for one Rupee only. Prepare pay off table. How many copies should he order? Also find Expected number of sales.

26. A project schedule has the following characteristics.

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

- (1) Construct network diagram
- (2) Compute TE and T<sub>l</sub> for each event
- (3) Find EST, LST, EFT and LFT values of all activities
- (4) Find critical path and project duration

27. The following table shows all the necessary information on the available supply to each warehouse, the requirement of each market and the unit transportation cost from each warehouse to each market. Use test of optimality

	Warehouse					
	I	II	III	IV	V	Capacity
Shop A	6	4	4	7	5	100
Shop B	5	6	7	4	8	125
Shop C	3	4	6	3	4	175
Required:	60	80	85	105	70	

The cost of manufacture of the product at different production shop are

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 ware houses at minimum total cost.

(2 × 10 = 20 Marks)

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