

FOURTH SEMESTER UG DEGREE EXAMINATION, APRIL 2024**(Supplementary - 2018 Admission)****BBA****ABBA4C04T: MANAGEMENT SCIENCE****Time: 3 Hours****Maximum Marks: 80****PART A: Answer *all* the questions. Each carries 1 mark.****Choose the correct answer.**

1. Operation research approach is.....
A) scientific B) multi-disciplinary C) intuitive D) collect essential data
2. Linear programming problem is a technique of finding the
A) feasible value B) initial value C) approximate value D) optimal value
3. The path which moves along the activities having total float is zero is
A) critical path B) free float C) total float D) independent float
4. When the total demand equal to supply then the transportation problem is said
A) balanced B) unbalanced C) maximization D) minimization
5. It is used for non-repetitive jobs
A) CPM B) Queue C) Replacement D) PERT

Fill in blanks.

6. In ----- model one set of property used to represent another set of properties.
7. ----- equal to expected value of perfect information – optimum EMV.
8. Linear programming problem is a technique of finding the -----.
9. The allocation cell in the transportation table is called -----
10. The event that occur before an event is called -----.

(10 × 1 = 10 Marks)**PART B: Answer any *eight* questions. Each carries 2 marks.**

11. Define operation research.
12. What is L.P. P.?
13. What is feasible solutions?
14. Write a note on regret table.
15. What is game theory?

(PTO)

16. What is a decision tree?
17. Comment on saddle point.
18. What is a sunk?
19. Give an account on dummy activity.
20. What is E M V?

(8 × 2 = 16 Marks)

PART C: Answer any six questions. Each question carries 4 marks.

21. Explain the limitations of O.R.
22. Explain the procedure of calculating transportation cost under Vogel's method.
23. An animal feed company must produce 200 Kg of a mixture consisting of ingredient A and B. The ingredient A costs Rs. 6 per Kg and B costs Rs.7 per Kg. No more than 100 kg of A can be used and at least 50 Kg of B must be used. Formulate the problem.
24. You are given the following pay-off matrix.
What will be the optimal decision if the criterion followed is Laplace? Given the probabilities for various events are 0.3, 0.4, 0.2

State of nature	Act		
	A1	A2	A3
S1	25	-12	- 57
S2	40	44	42
S3	56	25	57

25. Solve the following transportation table by least cost entry method:

Source	Destination			Supply
	A	B	C	
1	2	2	3	10
2	4	1	2	15
3	1	3	1	40
Demand	20	15	30	

26. Differentiate PERT and CPM.
27. Mean and Standard deviation of a project duration are 300 and 100 days respectively.
Find the probability for:
 - a) Complete within 183 days.
 - b) Not complete within 183 days.

28. 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 proceed 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.

(6 × 4 = 24 Marks)

PART D: Answer any two questions. Each carries 15 marks.

29. Define operation research. Explain important operation research models.

30. In PERT network, the critical path comprises of 5 activities whose estimated duration in weeks are given below.

Job	Optimistic time	Most likely time	Pessimistic time
1 – 2	4	8	12
2 – 3	5	6	10
3 – 5	10	12	20
5 – 8	2	5	8
8 - 10	3	4	5

If the project is scheduled for completion within 37 days, what is the probability of attaining this?

31. Solve the following problem graphically:

$$\text{Maximise } Z = 3X_1 + 4X_2$$

$$\text{Subject to } X_1 + X_2 \leq 450$$

$$2X_1 + X_2 \leq 600$$

$$X_1, X_2 \geq 0$$

(2 × 15 = 30 Marks)