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Total No. of Pages: 03
Total No. of Questions: 15

MBA (Sem.-3rd)

APPLIED OPERATIONS RESEARCH

Subject Code: MBA-301
Paper ID: [C1169]

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATE:

1. **Attempt any four questions. Each question is of 5 marks. Section-A**
2. **Attempt any one questions from each Section. Each question is of 08 marks. Section-B**
3. **Case study is of 08 marks Section-C is compulsory.**

Section –A

4x5=20

Q.1. Explain the difference and similarity between Network diagram and Gantt chart.

Q.2. Explain the difference and similarity between PERT and CPM.

Q.3. When is a linear programming problem said to be infeasible, unbounded and to have multiple solution?

Q.4. Explain by giving an example the difference between a pure strategy and a mixed strategy.

Q.5. How in sequencing model general assumptions of n jobs 2 machines and 2 jobs m machines differ?

Q.6. What is a replacement problem? Describe some important replacement situation.

Section –B

UNIT-I

Q.7. Explain various quantitative methods which are useful of decision making under uncertainty. **8**

Q.8. For the following project draw the network diagram and compute critical path, project completion time and various floats. **8**

Activity	A	B	C	D	E	F	G	H	I	J	K	L
Dependence	---	---	---	B,C	A	C	E	F	D,F,H	E	I,J	G
Time(days)	9	4	7	8	7	5	10	8	6	9	10	2

UNIT-II

Q.9. (a) Explain the properties of linear programming problem and discuss cases where each of the property fails.

(b) Detail the steps involved in information of linear programming problem. **4x2=8**

Q.10. A Company is faced with the problem of assigning 4 machines to 6 different jobs. The Profits are estimated as follows: (8)

	Machine			
Job	A	B	C	D
1	3	6	2	6
2	7	1	4	4
3	3	8	5	8
4	6	4	3	7
5	5	2	4	3
6	5	7	6	4

Solve the problem to maximize total profits.

UNIT-III

Q.11. Use graphical method to minimize time needed to process 2 jobs on the following machines:

Job 1	**Sequence**	A	B	C	D	E
	Time(hrs)	2	3	4	6	2
Job 2	**Sequence**	C	A	D	E	B
	Time(hrs)	4	5	3	2	6

Q.12. What is a game in game theory? What are the properties of a game? Explain the best strategy on the basic of minimize criterion of optimality. **8**

UNIT-IV

Q.13. (a) State the relationship between Poisson process and Exponential Probability Distribution.

(b) State the assumption of M/M/1 queuing model. **4x2=8**

Q.14. Cost per year the operating a taxi whose purchase price when new is Rs. 60,000 is given below: **8**

Age In Years	1	2	3	4	5
Operating Cost(Rs.)	10,000	12,000	15,000	18,000	20,000

After 5 years the operating cost is Rs.6000k where k=6,7,8,9,10 age in years. If the resale value decreases by 10% of purchase price each year, What is optimum replacement policy ?

Section –C

Case Study (Compulsory) **8**

Q.15. A person has two independent investments A and B available to him but he can take undertake only one at a time due to certain constraints. He can choose a first and then stop, or if A is successful then take B or vice versa. The probability of success of A is 0.6 while for B it is 0.4. Both investments require an initial capital outlay of Rs.10000 and both return Nothing if the venture is unsuccessful. Successful completion of A will return Rs.20000 and successful completion of B will return Rs.24000. Draw decision tree.

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