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B.B.A. Examination, June-2023
OPERATION RESEARCH
(BBA-602)
(New Course)

Time : 3 Hours] [Maximum Marks : 75
Note : Attempt questions all the sections as per the instructions.

Section-A

(Very Short Answer Questions)

Note : This question contains five parts, all parts will be compulsory. There will be no internal choice.

1. Write any two application area of operation research. 3
2. What is Linear Programming ? 3
3. What is degeneracy in Transportation Problem. 3
4. What is Decision Tree Approach ? 3
5. What is meant by PERT ? 3

Section-B

(Short Answer Questions)

Note : This section contains three questions, attempt any two questions. Each question carries 7.5 marks.

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6. Obtain the Initial Basic Feasible Solution to the following transportation problem by VAM.

		Consumers			Available
		A	B	C	
suppliers	X	6	8	4	14
	Y	4	9	8	12
	Z	1	2	6	05
Required		6	10	15	31

7. Solve the following assignment problem so as to minimise total time taken.

	A	B	C	D	E
I	11	17	06	16	20
II	09	07	12	05	16
III	03	16	15	12	26
IV	01	24	17	28	15
V	14	10	12	11	15

8. Write short note on the following topic :
(i) CPM (ii) EOL.

Section-C

(Descriptive Answer Questions)

Note : This section contains five questions, attempt any three questions. Each question carries 15 marks. Answer must be descriptive.

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(3)

9. Two products 'A' and 'B' are processed on three machines X_1 , X_2 and X_3 . The processing times per unit, machine availability and profit per unit are as follows : 15

Machine	Processing time (Hrs.)		Availability (Hrs.)
	'A'	'B'	
X_1	2	3	1500
X_2	3	2	1500
X_3	1	1	1000
Profit Per Unit	10	12	

Formulate the mathematical model, solve it by using the simplex method and also find the number of hour machine M_3 remains unutilised.

10. A project has the following time schedule : 15

Activity	Time (days)	Activity	Time (days)
1-2	2	4-6	3
1-3	2	5-8	1
1-4	1	6-9	5
2-5	4	7-8	4
3-6	8	8-9	3
3-7	5		

Construct PERT Network and Compute Critical Path and its duration.

(4)

11. HK Ltd. buys a product at the cost of ₹ 100 and sells to the retailers of ₹ 150. The product cannot be sold after the expiry date (same day). The market demand fluctuates between 1 to 5 units. The dealer want to decide how many units to order each day. Prepare a conditional pay off matrix and use EMV approach to suggest optimal decision. Suppose following probabilities are assigned to various possible events. 15

Demand	1	2	3	4	5
Prob.	0.10	0.20	0.30	0.25	0.15

12. What is Operation Research ? Discuss the nature, characteristics and application of Operation Research. 15
13. Write short note on the following topic : 15
- Big M Method
 - Job Sequence Analysis
 - Expected Monetary Value and Expected Opportunity Loss

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