2/11

2603N1116

Candidate's Seat No :_____

I.M.B.A. (Rep.) Sem.-4 Examination

OR

March-2025

Time : 2-30 Hours] **[Max. Marks : 70**

Instructions :(1) This paper contains **FIVE** questions.
(2) All questions are compulsory.
(3) Question No.**2, 3, 4** have internal options.
(4) Figures in the right side in parenthesis indicate marks.

Q:1 The cost matrix of a transportation problem is given below. Solve it by least cost method. **(14)**

	A	B	C	D	Supply
P	5	6	2	1	20
Q	2	3	5	8	20
R	2	6	7	4	20
Demand	15	15	15	15	

Q:2 Give application of O.R. in various fields. **(14)**

OR

Q:2 A question paper of mathematics is divided in two parts. Each question of first part carries 10 marks and requires 15 minutes to solve it, and each question of second part carries 15 marks and requires 25 minutes to solve it. The question paper contains the instruction that at least two questions from each section are to be attempted and maximum 8 questions are to be answered. Time duration of solving the paper is two and half hours. How many questions from each section should be answered to get maximum marks. **(14)**

Q:3 Solve the following assignment problem of maximizing the total production. The data regarding production on different machines are given in the following table **(14)**

	Machines			
Operators	I	II	III	IV
1	15	10	12	13
2	16	9	14	15
3	13	9	14	12
4	12	10	11	9
5	13	14	12	10

OR

(P.T.O)

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Q:3 Two companies are competing for business under the conditions so that one company's gain is another company's loss. The following payoff (in lakhs) is derived by company A for different strategies used for advertisements. **(14)**

Company A	Company B		
	No advertising	Medium advertising	Heavy advertising
No advertising	5	1	-7
Medium advertising	8	7	8
Heavy advertising	11	9	5

Suggest optimal strategies for the two companies.

Q:4 A system for accounting and inventory control is to be introduced in a restaurant. A computer company gives the following information. **(14)**

Activity	Preceding activity	Optimistic Time	Most Likely Time	Pessimistic Time
a	-	4	6	8
b	a	5	7	15
c	a	4	8	12
d	b	15	20	25
e	b	10	18	26
f	c	8	9	16
g	e	4	8	12
h	d, f	1	2	3
i	g, h	6	7	8

OR

Q:4 For the following information fund Expected times of the activities and prepare a PERT chart. Determine also critical path. **(14)**

Job	**Optimistic Time**	**Most Likely Time**	**Pessimistic Time**
1-2	1	2	3
1-3	1.5	2	2.5
1-4	2	4	9
2-5	2	3	7
3-6	4	4.5	8
3-7	6	8.25	9
4-7	3	3.5	7
5-8	2	2	2
6-8	2	4	6
7-9	2	5	8
8-9	2	3	4
9-10	2.5	4	5.5

Q:5 Solve the following transportation problem by Vogel's method. **(14)**

	A	B	C	D	Supply
P	12	8	9	11	15
Q	6	7	10	7	7
R	5	9	7	6	8
Demand	6	4	11	5	