

MAY 2014

**P/ID 77508/PMBH/
PMB1H/PMBSJ**

Time : Three hours

Maximum : 100 marks

PART A — (5 × 6 = 30 marks)

Answer any FIVE questions.

1. Describe the applications of OR in business decisions.
2. State the limitations of LPP.
3. How to resolved degeneracy in a transportation problem?
4. Describe the various types of floats.
5. State the applications of queuing theory.
6. What are the uses of inventory management?
7. Describe the importance of replacement models.
8. What is meant by mixed strategy and pure strategy in game theory?

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

9. Solve the LPP by graphically

Find the minimum $z = 4x_1 + 2x_2$

Subject to the constraints :

$$x_1 + 2x_2 \geq 2$$

$$3x_1 + x_2 \geq 3$$

$$4x_1 + 3x_2 \geq 6$$

$$x_1 \geq 0, x_2 \geq 0.$$

10. Find the initial solution to the following transportation problem

	D	E	F	G	Availability
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	

11. Solve the following assignment problem

	I	II	III	IV
1	8	26	17	11
2	13	28	4	26
3	38	19	18	15
4	19	26	24	10

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12. Draw a network and find a CPM for the given data

Activity	1-2	1-3	1-4	2-3	2-4	3-5	4-5
Duration	6	10	6	10	4	6	6

13. A super market has a single cashier. During peak hours, customers arrives at a rate of 20 customer per hour. The average number of customers that can be processed by the cashier is 24 per hour. Calculate the probability that the cashier is idle and the average number of customer in the queing system.

14. A flat owner finds from his past records that the cost per year of an auto whose purchase price is Rs : 60,000 is as given below

Year :	1	2	3	4	5
Running cost :	10,000	12,000	14,000	18,000	23,000
Resale value :	30,000	15,000	7,500	3,750	2,000
Year :	6	7	8		
Running cost :	28,000	34,000	40,000		
Resale value :	2,000	2,000	2,000		

Determine at what are is its replacement due.

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15. Solve the following game using graphical method

		Player B		
		1	3	11
Player A	8	5	2	

16. For a product to be manufactured with the company, the details are as follows
 $r = 36,000$ units/ year, $K = 72\,000$ units / year
 $C_o = \text{Rs. } 250$ / set up and $C_c = \text{Rs. } 25$ / unit / year.
Find EOQ.

PART C — (1 × 20 = 20 marks)

(Compulsory)

17. Solve the following LPP using the surplus method

Maximize $z = 3x_1 + 2x_2$

Subject to : $x_1 + x_2 \leq 44$

$x_1 - x_2 \leq 2$

$x_1, x_2 \geq 0$.

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