

(i) Printed Pages : 3

Roll No. ....

(ii) Questions : 9

Sub. Code : 

2	6	0	4	6
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Exam. Code : 

0	4	6	1
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**M.Sc. Information Technology 3<sup>rd</sup> Semester**

**(2125)**

**SYSTEMS APPROACH TO MANAGEMENT AND  
OPTIMIZATION TECHNIQUES**

**Paper : MS-14**

**Time Allowed : Three Hours]**

**[Maximum Marks : 80**

**Note :—** Attempt **FIVE** questions in all, including Q. No. 1 in Section-A, which is compulsory and taking **ONE** each from Section-B to Section-E. Marks are indicated on the right of various questions.

**SECTION—A**

**(Compulsory Question)**

1. (a) Explain how the decision-making process works. Explain the role of Decision Support Systems towards making decisions.
- (b) What is industrial engineering?
- (c) What are the limitations of Operations Research (OR)?
- (d) What is binary linear programming? 4,4,4,4

### SECTION—B

2. What is Operations Research (OR)? Describe the historical background, scope and models of OR. What is the role of Computers in OR? 16
3. Write the dual of the following linear programming problem and solve the dual:

$$\text{Maximize } z = 5x_1 + 12x_2 + 4x_3$$

subject to

$$x_1 + 2x_2 + x_3 \leq 5$$

$$2x_1 - x_2 + 3x_3 = 2$$

$$x_1, x_2, x_3 \geq 0$$

16

### SECTION—C

4. Solve the following transportation problem and obtain the optimal solution and optimal cost: (O-origin and D-destination)

	D1	D2	D3	Supply
O1	5	1	0	20
O2	3	2	4	10
O3	7	5	2	15
O4	9	6	0	15
Demand	5	10	15	

16

5. Explain the following with examples:
- (a) Dynamic Programming
- (b) Integer Programming

8,8

## SECTION—D

6. Discuss the nature and scope of management information system. Explain why information systems are so important for business today. 16
7. Explain about marketing intelligence and marketing information systems with the help of examples and diagrams. 16

## SECTION—E

8. What do you mean by manufacturing information system? Explain the fundamental components, subsystems and characteristics of such a system. 16
9. Describe ways in which a financial information system could provide a competitive edge for this company by including its various subsystems and applications with suitable examples. 16