

CT Inst. of Engg.,

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (ME) (Sem.-7th/8th)
OPERATIONS RESEARCH
 Subject Code : ME-406
 Paper ID : [A0840]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A**I. Write briefly :**

- Basic and Non Basic Variables
- Slack variables
- North West Corner Method
- PERT
- Unbalanced Assignment Problem
- Carrying Cost
- Dummy Activity
- Critical Path
- What is saddle point?
- What is unbounded solution?

SECTION-B

- A particular item has a demand of 9000 units per year. The cost of ordering is Rs. 100 per order. The carrying cost is Rs. 2.40/- per unit per year. Determine
 - The economic order quantity.
 - Number of orders per year.
 - Time between orders.
 - Total cost per year if the cost of one unit is Re. 1.

III. Solve the following assignment problem :

	II	III	IV
1	17	8	16
2	7	12	6
3	16	15	12
4	24	17	28

IV. Solve the following game problem and find the optimal strategies of the two players A and B

		Player B	
		BI	BII
Player A	AI	-2	0
	AII	3	2
	AIII	-4	-3
	AIV	5	3

V. Explain deterministic dynamic programming.

VI. How would you deal with replacement of item?

SECTION - C

VII. What are the different phases of project management? Explain activity, event, network diagram and critical path management.

VIII. Solve the following linear programming problem

$$\begin{aligned}
 &\text{Maximize } Z = 5X_1 + 4X_2 \\
 &\text{Subject to } 2X_1 - 4X_2 \leq 1 \\
 &\quad \quad \quad 2X_1 + 4X_2 \geq 3 \\
 &\quad \quad \quad X_1, X_2 \geq 0
 \end{aligned}$$

IX. Define OR. Give objectives of OR. Explain

