

CT Inst. of Engg.,

M



E	B,C
F	D,E
G	E
H	G
I	G,F
J	I,H
K	J

Roll No.

Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. (ME) (Sem.-1st)**OPTIMIZATION TECHNIQUES**

Subject Code : MME-501

Paper ID : [E0408]

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carry TWENTY marks.

1. Define operation research. Discuss the various techniques and tools of operation research. (20)
2. What do you understand by the concept of duality in LP problems? State and illustrate the various rules for converting the primal into dual. (20)
3. Solve the following assignment problem :

	I	II	III	IV	V
1	11	18	8	16	22
2	9	8	12	6	15
3	13	16	15	12	18
4	21	22	17	28	26
5	15	10	12	11	13

(20)

4. A project schedule has the following characteristics :

Activity	Immediate Predecessor(S)	Time (weeks)
A	—	3
B	A	3
C	A	3
D	C	5

- (i) Construct the network.

- (ii) Compute the earliest and latest time for each

- (iii) Find the critical path.

5. Define dynamic programming. How it is different from linear programming? Explain briefly deterministic and probabilistic dynamic programming.
6. Solve the following game problem :

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

7. Solve the following non - linear programming problem. State the necessary and sufficient Kuhn-Tucker conditions :

$$\text{Maximize } Z = 2X_1^2 - 7X_2^2 + 12X_1X_2$$

$$\text{Subject to } 2X_1 + 5X_2 \leq 98$$

$$X_1, X_2 \geq 0$$

8. Explain the following in context of transportation problem :

(I) North West Corner Method.

(II) Modified Distribution Method.