

SET-1

1) A manufacturing firm produces two machine parts using lathes, milling machines, and grinding machines. The different machining times required for each part, the machining times available on different machines, and the profit on each machine part are given in the following table

Type of machine	Machining time required (min)		Maximum time available per week (min)
	Machine part I	Machine part II	
Lathes	10	5	2500
Milling machines	4	10	2000
Grinding machines	1	1.5	450
Profit per unit	\$50	\$100	

Determine the number of parts I and II to be manufactured per week to maximize the profit **(15 M)**

2) Maximize $F = X_1 + 2X_2 + X_3$

subject to

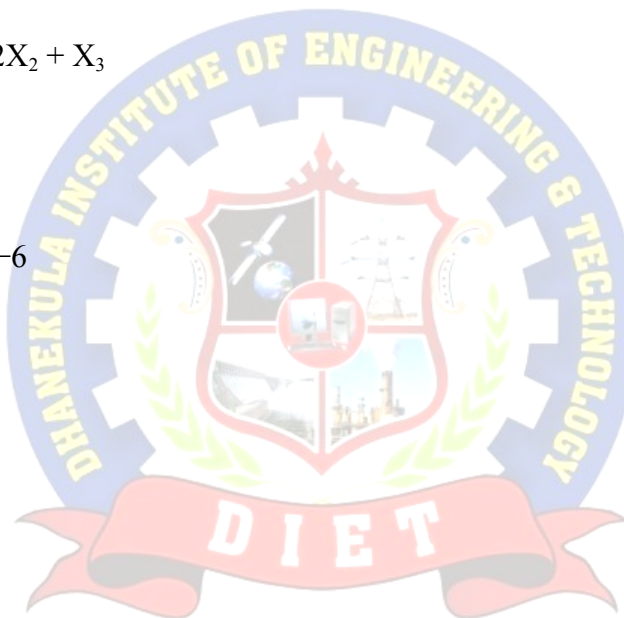
$$2X_1 + X_2 - X_3 \leq 2$$

$$-2X_1 + X_2 - 5X_3 \geq -6$$

$$4X_1 + X_2 + X_3 \leq 6$$

$$X_i \geq 0, i = 1, 2, 3$$

(15 M)



SET- II

1) Solve The Following LPP using graphical method.

$$\text{Maximize } Z = 12X_1 + 16X_2$$

$$\text{subjected to } 10X_1 + 20X_2 \leq 120$$

$$8X_1 + 8X_2 \leq 80$$

$$X_1 \text{ \& } X_2 \geq 0$$

(15 M)

2) Maximize $Z = X_1 - X_2 + 3X_3$

Subjected to

$$2X_1 + X_2 + X_3 \leq 10$$

$$2X_1 - X_3 \leq 2$$

$$2X_1 - 2X_2 + 3X_3 \leq 10$$

$$X_1, X_2, X_3 \geq 0$$

(15 M)

