Department of Mathematics

KIIT Deemed to be University

Subject: Optimization Technique

Subject Code: MA-10003

Assignment-II (2022-23)

Full Marks-10

Q.1) Obtain the dual of the following LPP **3 Marks**

$$\text{Max } Z = 3x_1 + x_2 + 2x_3 - x_4$$

Subject to

$$2x_1 - x_2 + 3x_3 + x_4 = 1$$

$$x_1 + x_2 - x_3 + x_4 = 3$$ **[CO4]**

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

x_4 is unrestricted.

Q.2) Solve the following LPP by dual simplex method: **3 Marks**

$$\text{Min } Z = 10x_1 + 6x_2 + 2x_3$$

Subject to

[CO3]

$$-x_1 + x_2 + x_3 \geq 1$$

$$3x_1 + x_2 - x_3 \geq 2$$

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

Q.3) For the following transportation problem find the initial basic feasible solution by using Vogel's approximation method and hence test the optimality. **4 Marks**

D / S	D_1	D_2	D_3	Supply
S_1	2	2	3	**10**
S_1	4	1	2	**15**
S_1	1	3	1	**40**
Demand	**20**	**15**	**30**	**65**

[CO5]