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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- FEB-2023

COURSE CODE(CREDITS): 19B1WEC733(3) MAX. MARKS: 15

COURSE NAME: Optimization Techniques

COURSE INSTRUCTORS:Dr.Neel Kanth MAX. TIME: 1 Hour

Note: *All questions are compulsory. Marks are indicated against each question in square brackets.*

Q1.A firm manufactures two type of products A and B and sells them at a profit of Rs. 2 on type A and Rs. 3 on type B. Each product is processed on two machines G and H.Type A requires one minute of processing time on machine G and two minutes on H.Type B requires one minute on G and one minute on H.The machine G is available for not more than 6 hours 40 minutes while machine H is available for 10 hours during any working day. Formulate the problem as linear programming problem and solve it graphically. [5]

Q2.Solve the linear programming problem [5]

$$Min\ Z = 4x_1 + 2x_2$$

$$\text{s/t} \quad x_1 + 2x_2 \geq 2$$

$$3x_1 + x_2 \geq 3$$

$$4x_1 + 3x_2 \geq 6$$

$$x_1, x_2 \geq 0$$

Q3. Solve the linear programming problem by simplex method. [5]

$$Max\ Z = 4x_1 + 10x_2$$

$$\text{s/t} \quad 2x_1 + x_2 \leq 50$$

$$2x_1 + 5x_2 \leq 100$$

$$2x_1 + 3x_2 \leq 90$$

$$x_1, x_2 \geq 0$$