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 plans to purchase at least 200 quintals of scrap containing high quality metal X and low quality metal Y.It is decided that the scrap to be purchased must contain at least 100 quintal of metal X and not more than 35 quintals of metal Y.The firm can purchase the scrap from two suppliers (A and B) in unlimited quantities. The percentage of X and Y metals in terms of weight in the scraps supplied by A and B is given below:

Metals	Supplier A	Supplier B
X	25 %	75 %
Y	10 %	20 %

The price of A's scrap is Rs.200 per quintal and that of B's is Rs.400 per quintal. Formulate the problem as linear programming problem in order to minimize the purchase cost and solve it graphically.

[5][CO-1]

Q2.Solve the linear programming problem using Simplex method

$$Max\ R = 2x + 4y + 3z$$

s/t $\quad 3x + 4y + 2z \leq 60, \quad 2x + y + 2z \leq 40 \quad and \quad x + 3y + 2z \leq 80$

$$x, y, z \geq 0$$

[5][CO-1]

Q3. Solve the linear programming problem

$$Max\ R = 5x - 2y - z$$

s/t $\quad 2x + 2y - z \geq 2, \quad 3x - 4y \geq 3 \quad and \quad y + 3z \geq 5$

$$x, y, z \geq 0$$

[5][CO-1]