Heel Kaur

JAYPEE UNIVERSITY OF INFORMATRION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATION- September-2017
B.Tech VIIth Semester (All Branches)

COURSE CODE: 10B1WMA731 MAX. MARKS: 15
COURSE NAME: Optimization Techniques
COURSE CREDITS: 03 MAX. TIME: 1 Hr

Note: All questions are compulsory. Marks are indicated in square bracket against each question. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q1.Reddy Mikks produces both interior and exterior paints from two raw materials M1 and M2.The following table provides the basic data of the problem

	Raw material required per ton for exterior paint	Raw material required per ton for interior paint	Max daily availability
M1	6	4	24
M2	1	2	6
Profit per ton	5	4	

A market survey restricts the maximum daily demand of interior paint to 2 tons. Also the daily demand for interior paint cannot exceed that of exterior paint by more than 1 ton. Formulate the problem as L.P.P in order to maximize the total daily profit. Also solve the problem by graphical method. [5]

Q2.Solve the L.P.P by two-phase method. [5]

$$Min\ Z = 4x_1 + 6x_2 + 5x_3$$

$$s/t\ 2x_1 + 4x_2 + 3x_3 \geq 32$$

$$x_1 + 2x_2 + 4x_3 \geq 28$$

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

Q3.Find the dual of the given primal problem and find the solution of primal from the solution of dual. [5]

$$Max\ Z = \frac{55}{4}x_1 + \frac{25}{2}x_2 + 10x_3$$

$$s/t\ \frac{1}{4}x_1 \geq 10$$

$$\frac{1}{4}x_1 + \frac{1}{2}x_2 \geq 24$$

$$\frac{1}{2}x_1 + \frac{1}{2}x_2 + x_3 \geq 50$$

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

MA-4, B7