

Dr. Babasaheb Ambedkar Open University
Term End Exam August – 2010

Course Code : DOR-01 Roll No. _____
Subject : Basics of Operation Research
Date : 02-08-2010 Marks : 70
Time : 11:00 to 02:00

Note : All questions carry equal marks.

Que 1: Define Operation Research and state its relations with decision making.

OR

Describe various Operation research Models.

Que 2: Describe the structure of the linear programming model.

OR

State the guidelines in linear programming model formulation.

Que 3: State the Importance of linear programming models.

OR

State the uses of Operation research in various area.

Que 4: Priti Ltd. has two machines A and B. He manufactures two products. P and Q on these machines. For manufacturing product P he has to use machine A for 3 hours and machine B for 6 hours, and for manufacturing product Q she has to use machine A for 6 hours and machine B for 5 hours. On each unit of P she earn Rs.4 and on each unit of Q she earn Rs.5. How many units of P and Q should be manufactured to get maximum profit? Each machine may not be used for more than 2100 hours.

OR

Use the graphical method to solve the following LP problem for Krishna Ltd.

Minimize $Z = 20x_1 + 10x_2$ subject to the constraints.

$$x_1 + 2x_2 < 40$$

$$3x_1 + x_2 > 30$$

$$4x_1 + 3x_2 \geq 60 \text{ and } x_1, x_2 \geq 0.$$

(P.T.O)

Que 5: Pintu furniture manufacturer makes two products: Chairs and tables. Processing of these products is done on two machines A and B. A chair requires 3 hours on machine A and 6 hours on machine B. A table requires 6 hours on machine A and no time on machine B. There are 16 hours per day available on machine A and 40 hours on machine B. Profit gained by the manufacturer from a chair and a table is Rs.4 and Rs.10 respectively.

What should be the daily production of each of the two products?

OR

A diet for a sick person must contain at least 4100 units of Vitamins, 50 units of minerals and 1300 calories. Two foods A and B are available in the market at a cost of Rs.50 and 35 respectively. One unit of A contains 250 units of vitamins, 1 unit of mineral and 40 calories and one unit of B contains 100 units of vitamins, 2 units of minerals and 40 calories.

Solve the problem graphically.

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