**SESSION AUG/SEP 2022**

**PROGRAM MASTER OF BUSINESS ADMINISTRATION (MBA)**

**SEMESTER III**

**COURSE CODE &amp; NAME DOMS304 – APPLICATIONS OF OPERATIONS RESEARCH**

**CREDITS 4**

**Assignment Set – 1**

**1. A firm makes product x and y and has a total production of a capacity of 9 tonnes per day x and y requiring the same production capacity. The firm has a permanent contract to supply at least 2 tonnes of x and at least 3 tonnes of y per day to another company. Each tonne of x requires 20 machine hours production time and each tonne of y requires 50 machine hours production time. The daily maximum possible number of machine hours is 360. All the firms output can be sold, and the profit made is Rs. 80 per tonne of x and Rs. 120 per tonne of y. Formulate the above as Linear Programming Problem ad solve it by graphical method.**

**Solution:** Let product A be x and product B be y. Hence we have

x+y≤9

x≥2, y≥3

Its Half solved only

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**2. Solve the following linear programming problem using Revised Simplex Method:**

**Maximize Z = 3x 1 + 5x 2**

**Subject to: x 1 ≤ 4**

**2x 2 ≤ 12**

**3x 1 + 2x 2 ≤ 18**

**Where x 1, x 2 ≥ 0**

**3. Solve the following Linear Programming problem using its Dual:**

**Minimize Z = 40x 1 + 200x 2**

**Subject to: 4x 1 + 40x 2 ≥ 160**

**3x 1 + 10x 2 ≥ 60**

**8x 1 + 10x 2 ≥ 80**

**and x 1 , x 2 ≥ 0**

**Assignment Set – 2**

**4. A car hire company has one car at each of the five depots a, b, c, d, &amp; e. A customer in each of the five towns A, B, C, D &amp; E requires a car. The distance (in miles) between the depots (origins) and the towns (destinations) where the customers are given in the following distance matrix. How the cars should be assigned to the customers so as to minimize the distance travelled.**

**5. Solve the following integer programming problem using Branch and Bound method:**

**Maximize Z = 2x 1 + 3x 2**

**Subject to: 6x 1 + 5x 2 ≤ 25**

**x 1 + 3x 2 ≤ 10**

**and x 1 , x 2 are non-negative integers**

**6. Write detail notes on the following:**

**i) Tabu Search Method**

**Ans:** Tabu search is a metaheuristic local search method used for mathematical optimization. Local search methods have the tendency to be stuck in suboptimal regions. TS enhance the performance of these techniques by prohibiting already visited solutions or others through user-provided rules.

**Tabu Search**