

End Semester Examinations - 2015-16 Even Semester - May 2016

14MA3018 Optimization Techniques

Set B

Time : 3 hrs
Total Marks: 100

1. Solve the following LPP by using Simplex method.

Maximize

$$z = 4x_1 + 10x_2$$

Subject to

$$2x_1 + x_2 \leq 50$$

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

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

$$x_1, x_2 \geq 0$$

OR

2. Solve the following LPP by using dual Simplex method.

Maximize

$$z = 2x_1 + x_2$$

Subject to

$$3x_1 + x_2 \geq 3$$

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

$$x_1 + 2x_2 \geq 3$$

$$x_1, x_2 \geq 0$$

3. Find the optimum integer solution for the following LPP using Gomary's cutting plane method.

Maximize

$$z = 2x_1 + 2x_2$$

Subject to

$$5x_1 + 3x_2 \leq 8$$

$$2x_1 + 4x_2 \leq 8$$

$$x_1, x_2 \geq 0$$

OR

4. Find the optimum integer solution for the following LPP using Branch and Bound technique.

Maximize

$$z = 2x_1 + 2x_2$$

Subject to

$$2x_1 + 4x_2 \leq 7$$

$$5x_1 + 3x_2 \leq 15$$

$$x_1, x_2 \geq 0$$

5. Solve the following NLPP by using Lagrangean method.

Maximize

$$z = 4x_1 - 0.02x_1^2 + x_2 - 0.02x_2^2$$

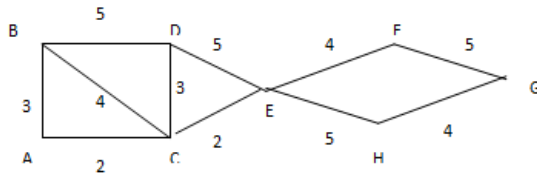
Subject to

$$x_1 + 2x_2 = 120$$

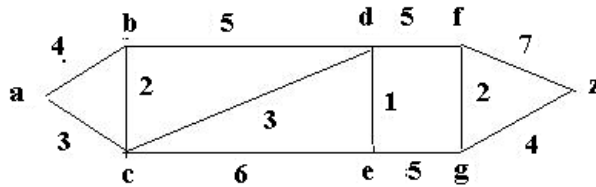
$$x_1, x_2 \geq 0$$

OR

6. Find the minimal spanning tree using Prim's and Kruskal's algorithm.

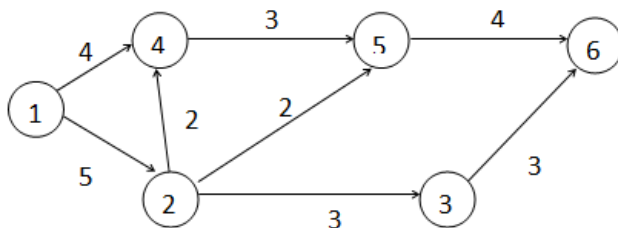


7. Find the shortest path using Dijkstra's algorithm.



OR

8. Find a maximum flow in the given network by using the labeling algorithm.



9. Solve the following NLPP using Kuhn -Tucker condition...

Maximize

$$z = 3x_1^2 + 14x_1x_2 - 8x_2^2$$

Subject to

$$3x_1 + 6x_2 \leq 72$$

$$x_1, x_2 \geq 0$$

Wishing you All the Best
