Bahria University
Discovering Knowledge

Subject Name: Linear Algebra
BSCS- 5th -A
Department of Computer Science
Bahria University, Lahore Campus

Assignment: [2]

Date: Week 7, 25 March 2024

Name: _____

Roll No: _____

Evaluation of CLO	Question Number	Marks	Obtained Marks
CLO3: CLO statement **Solve** systems of linear equations appearing in different engineering applications	1	10	
	2	5	
	3	5	
	4	10	
Total Marks		**30**	

Question 1

a) Determine the values of q for which the system has no solutions, exactly one solution, or infinitely many solutions

$$x + 2y + z = 2$$
$$2x - 2y + 3z = 1$$
$$x + 2y + (q^2 - 3)z = q$$

b) Assume any 3 appropriate values of q to plot, using GeoGebra, corresponding planes which represent no solution, exactly one solution and infinitely many solutions. Attach the plots with your work.

Question 2

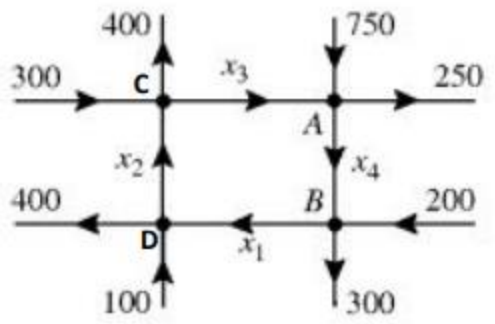
Ali wants to surprise his wife Sara by presenting her some flowers, when he returns back from a work tour. He plans to spend exactly $24 on a bunch of exactly two dozen flowers. Sara loves lilies, roses and daisies. At the flower market they are selling lilies for $3 each, roses for $2 each, and daisies $0.50 each. How many flowers of each type can Ali buy?

Question 3

A soap manufacturer wants to spend 60 Lac rupees on radio, magazine, and TV advertising. If he spends as much on TV advertisement as on magazines and radio together, and the amount spend on magazines and TV combined equals 5 times that spent on radio, what is the amount to be spent on each type of advertising?

Question 4

The accompanying figure shows the traffic flow (vehicles per hour) through a network of streets given that the inward traffic flow is equal to the outward flow.



a) Set up a linear system whose solution provides the unknown flow rates
b) Solve this system for unknown flow rates
c) Find the traffic flow when $x_3 = 0$ and $x_4 = 100$ $if\ possible.$
d) Is it possible to close the road from A to B for construction and keep traffic flowing on the other streets? Explain your answer in reference to parametric solution you got in part b.