National University of Computer and Emerging Sciences

Lahore Campus

Linear Algebra (MT1004)

Date: April 5th 2024

Course Instructors

Dr Saeeda Zia

Ms Sarah Asghar

Sessional-II Exam

Total Time: 1 Hour

Total Marks: 25

Total Questions: 03

22i-2505 Roll No

SE-4A Section

~~HRS~~ Student Signature

Attempt all the questions

CLO # 5: Recognize vector spaces and/or subspaces and compute their bases and its dimension

Q. No 1: Consider the set of all pairs of real numbers of the form $(1, x)$ with the operations $(1 + y_1) + (1 + y_2) = (1, y_1 + y_2)$ and $k(1, y_1) = (1, ky_1)$.

Determine whether this is a vector space or not? [10]

CLO #5: Recognize vector spaces and/or subspaces to compute their bases and its dimension.

Q. No 2: Find a basis for the solution space of the homogeneous linear system, and find dimension of that space. [10]

$$x_1 + x_2 - x_3 = 0$$
$$-2x_1 - x_2 + 2x_3 = 0$$
$$-x_1 + x_3 = 0.$$

CLO #4: Analyse vectors and their properties in 2-space, 3-space and n-space.

Q. No 3: Find vector and parametric equations of the line through the origin of R^4 that is parallel to the vector $\boldsymbol{v} = (5, -3, 6, 1)$. [5]

0015