

UNIVERSITY OF SARDODHA
DEPARTMENT OF PHYSICS

Conduct of Online Mid Term Exam through Zoom due on 17-04-2020 to 24-04-2020

Subject: Linear Algebra

Teacher Name: Nida Ibrar

Submitted date: 16-04-2020

ASSIGNMENT

Student Name:

Student ID:

Q1. Define Cramer's Rule, why this method to dealing linear system of equation? Also find a determinant of $n -$ order matrix? Given reason to support your answer and show your work not less than 15 pages. **(10) Your Presentation/Viva will held on 17-04-2020 (Friday) at 10:00 am**

(Muhammad Saalam) **(Repeater)**

Q2. Difference between the Laplacian Matrix and Hermitian Matrix write the General form also give example 2×2 and 3×3 order matrix? Given reason to support your answer and show your work not less than 15 pages. **(10). your Presentation/Viva will held on 17-04-2020 (Friday) at 10:30 am.**

(Hussain Ahmed) **(Repeater)**

Q3. a) Define the Rectangular Matrix and describe all type of rectangular matrix?

b) Define the all properties of Transpose matrix?

Your assignment material not less than 15 pages. **(10)**

Given reason to support your answer and show your work not less than 15 pages. **Your Presentation/Viva will held on 17-04-2020 (Friday) at 11:00 am.**

(Ahmed Ishaque) **(Repeater)**

Q4. Define the Elementary Matrix and write the notation and their operation why and when use this Matrix your assignment material not less than 15 pages. **(10).** given reason to support your answer and show your work not less than 15 pages. **Your presentation/Viva will held on 17-04-2020 (Friday) at 11:30 am.**

(Yahir Abbas) **(Repeater)**

$$\begin{matrix} x & x^2 & 1+x^3 \\ y & y^2 & 1+y^3 \\ z & z^2 & 1+z^3 \end{matrix} = 0;$$
Q5. If x, y, z are different and $xyz = -1$. Given reason to support your answer and show your work not less than 15 pages. **(10) Your presentation/Viva will held on 20-04-2020 (Monday) at 09:30 am.**

(Ali Ahsan)(Repeater)

Q6. Expand the determinant of square matrix $A = [a]_{3 \times 3}$ along the second row and the first column and show that you get the same value. $|A| = \begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix}$. And also show that given matrix is singular are not? Given reason to support your answer and show your work not less than 15 pages. **(10) Your presentation/Viva will held on 20-04-2020 (Monday) at 10:00 am.**

(Muhammad Umair)(Repeater)

Q7. Consider a linear system in form of matrix is given by $\left[\begin{array}{ccc|c} 1 & 2 & 1 & 1 \\ -1 & 4 & 3 & 2 \\ 2 & -2 & \alpha & 3 \end{array} \right]$

- For what value of α will the system have a unique solution?
- For what value of α will the system have no solution?
- Is there a value of α at which the system has infinitely many solutions? Given reason to support your answer and show your work. **(10) Your presentation/Viva will held on 21-04-2020 (Tuesday) at 11:00 am. (Maryum Rani)(Repeater)**

Q8. Geometrical description of the possible solution sets for a 3×3 linear system? Given reason to support your answer and show your work. **(10) Your presentation/Viva will held on 21-04-2020 (Tuesday) at 11:30 am. (Abu Sufyan)(Repeater)**

Q9. Let A be a 4×4 matrix. Suppose that A can be reduced to an upper triangular matrix U by a sequence of elementary row operation

$$U = \begin{bmatrix} 3 & 1 & 4 & 0 \\ 0 & 1 & 1 & -2 \\ 0 & 0 & 2 & -1 \\ 0 & 0 & 0 & 4 \end{bmatrix}$$

Given reason to support your answer and show your work. **(10) Your presentation/Viva will held on 21-04-2020 (Tuesday) at 12:00 pm. (Muhammad Arshad)(Repeater)**

Q. 10 State a rank theorem. Given reason to support your answer and show your work not less than 15 pages. **(10)Your presentation/Viva will held on 02-05-2020 at 11:00 am (Sana Imtiaz (BPHF17E049))**

Q.11 Suppose A is an n by n matrix. Given at least 10 Equivalent statement to A is invertible. Given reason to support your answer and show your work not less than 15 pages. (10)**Your presentation/Viva will held on 29-04-2020 at 9:00 am (Muhammad Ameer Hamza (BPHF17E038))**

Q.12 Use any method to solve the unique solution of linear system. Given reason to support your answer and show your work not less than 15 pages. (10)**Your presentation/Viva will held on 29-04 2020 at 9:30 am(Shahid Iqbal (BPHF16E023))**

Q. 13 Suppose A is a real n by n matrix. Describe the process of using the elementary row operation to determine if A is invertible and if it is, finding the inverse of A . Given reason to support your answer and show your work not less than 15 pages. (10)**Your presentation/Viva will held on 02-05-2020 at 11:00 am (M Fahad khan (BPHF17M026))**

GOOD LUCK