P P SAVANI UNIVERSITY

First Semester of B.Sc. IT Examination

January 2022

SESH1040 Mathematics for Computer Applications

24.01.2022, Monday **Time: 09:00 A.M. To 11:30 A.M.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in same answer sheet.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

Q - 1 Answer **all** the questions. **[05]**

(i) Write Diagonal and singular Matrix with one example.

(ii) What is Minor of the Matrix give one example?

(iii) Write the Symmetric relation with one example.

Answer any **Five** of the followings.

Q - 2 Matrix A has x rows and $x+5$ columns. Matrix B has y rows and $11-y$ columns. Both AB and BA exists, then find the value of x and y. **[05]**

Q - 3 If $A = \begin{pmatrix} 5 & 2 & 2 \\ 3 & -3 & -4 \\ -5 & 2 & -3 \end{pmatrix}$. Find the cofactor of the Matrix A. **[05]**

Q - 4 Solve the system of linear equations by Cramer's Rule, where system of equation is **[05]**

$x + y + 2z = 9,\ 2x + 4y - 3z = 1, 3x + 6y - 5z = 0.$

Q - 5 If A is a square Matrix then prove that $A - A'$ is skew-symmetric matrix. **[05]**

Q - 6 If $A = \{1,4\}$, $B = \{3,4\}$, $C = \{3,6\}$, verify that $A \times (BU\ C) = (A \times B)U(A \times C)$. **[05]**

Q - 7 How many total number of permutation possible from the number 2, 3, 4, 5, 6, 7, 8, 9 which form the number between 1000-9999. **[05]**

SECTION – II

Q - 1 Answer **all** the questions. **[06]**

(i) What is the distance between the points $(-9,9)$ *and* $(-8,-8)$. Also write the line of equation.

(ii) Write the standard form of parabola and hyperbola.

(iii) Write the definition of Quantifiers with one example.

Answer any **Three** of the followings.

Q - 2 Prove that the lines $3x + 2y - 9 = 0$ and $6x + 4y - 8 = 0$ are parallel to each other. Also find the point which pass through these two lines. **[08]**

Q - 3 Consider $A = B = C = R$ and let $f: A \to B$ and $g: B \to C$ where $f(x) = x^2 - 8$ and $g(x) = x^2 + 4$ then find the composite function $(fOg)(-4)$. **[08]**

Q - 4 Find the value of a, if the distance between the points $A(-7,-12)$ and $B(a,-5)$ is 10 units. Also find the slope of the line. **[08]**

Q - 5 Write the definition of Tautology, Contradiction and Contingency with one example. **[08]**