Name of the Course	:	CBCS-(LOCF)-Generic Elective B.A.(Prog.)/ B.Com(Prog)
Unique Paper Code	:	62355503
Name of the Paper	:	GE- General Mathematics-I
Semester	:	V
Duration	:	3 hours
Maximum Marks	:	75 Marks

Attempt any four questions. All questions carry equal marks.

1. Write a short note on the life and mathematical contribution of any of three of the following Mathematicians:
   a. Aryabhata
   b. Bhaskara- II
   c. Paramesvara
   d. Brahmagupta

2. Define Perfect numbers and Amicable numbers. State the properties of Perfect numbers.

Define unit fraction and express $\frac{3}{4}$ and $\frac{5}{8}$ as unit fraction.
Define algebraic numbers and transcendental numbers. Why π is not an algebraic number?

3. Define the Inversion and explain The Fifteen Puzzle.

Find the remainder when

$12345 \times 123456 \times 1234567$ $is\ divided\ by$ 13 .

What is the Euclidean algorithm? Find the greatest common divisor of 60 and 25.

4. Find the number of distinct permutations of the letters in "Karnataka" and "Chennai"?

Let $A = \begin{bmatrix} 2 & 1 & 3 \\ 3 & 4 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & 6 \\ 0 & 1 & 3 \\ 2 & 1 & 4 \end{bmatrix}$. Compute the product AB and BA whichever exists.

5. Express the matrix A as the sum of a symmetric and skew symmetric matrix

$$A = \begin{bmatrix} 2 & 0 & -3 \\ 4 & 3 & 1 \\ -5 & 7 & 2 \end{bmatrix}$$

Let $C = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, Find λ so that $C^2 = 5C + \lambda I$

6. Use Cramer's Rule to solve for x and y in the below two equations

$$x - 2y = 4$$
$$-3x + 5y = -7$$

If $A = \begin{bmatrix} 2 & 3 & -2 \\ 1 & 2 & 3 \\ -2 & 1 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & -2 & 4 \\ 1 & 2 & 1 \\ 0 & 1 & -1 \end{bmatrix}$, Find det(AB), det(A) and det(B) and Verify

whether det(AB) = det(A) * det(B)