**BTECH SEM-II Linear Algebra**

**UNIT-I (Matrices and Determinants)**

**Tutorial-I**

**Determinants:**

1. Prove that 
2. Evaluate using the properties of determinants  Ans: 576
3. Using properties of determinants, prove that



1. Using properties of determinants, prove that



1. Prove that 

**Using Cramer’s Rule , Solve the following system of equations**

1. x + y + z = 1, 3x + 5y + 6z = 4, 9x + 2y - 36z = 17

Ans: x = 1/3, y = 1, z = -1/3

1. x + y + z = 1, x + 2y + 3z = k, 12x + 22y + 32z = k2 ;

Ans: x = (2- k) (3 - k)/2, y = (k - 1) (3 - k), z = (1- k) (2 - k)/2

**Consistency of system of equation:**

1. Find the values of  for which the following system of equation is consistent and has non trivial solution;

 Ans: =3, 0

1. For what values of  the following system of equation

2x + 3y + 5z = 9, 7x + 3y -2z = 8, 2x + 3y +z =

will have (i)unique solu (ii) no solution Ans: (i) (ii) 

**Tutorial 2**

**Matrices:**

1. Matrices A and B are such that 3A-2B =  and -4A + B =  Find A and B? Ans : A = , B = 
2. If A = and B =  show that AB BA
3. Find A satisfying the matrix equation 

Ans: A = 

1. Solve by matrix method 

Ans: x = 20/29, y = 3/29, z= 1/29

1. Solve by matrix method 3x + 2y + 4z = 7, 2x + y+ z = 4, x + 3y + 5z = 2

Ans: x = 9/4, y = -9/8, z = 5/8

1. For the matrix  , find .
2. If  find Use adjoint method.  
    

**Tutorial 3**

1. Find the matrix , if. 
2. Verify that  also find  where   
    
3. Find the condition on such that the matrix  has an inverse. Also obtain  for =1. 
4. Express A =  as the sum of Hermitian and skew Hermitian.
5. Show that U =  is a unitary matrix, where  is complex cube root of unity.
6. Verify that A =  is orthogonal.
7. Determine the values of  when  is orthogonal.

Ans: 

1. Show that A= is an orthogonal matrix.