**Slip No.:-1**

* + 1. Write Python code to repeat the following string 9 times using the string operator ‘\*’.
       1. Python
       2. Mathematics

2.Write a function that calculate sum and products of three number 2,3,4 in python.'''

3. Find the value of tan(π/3) and tanh(π/6) using math module in python.

# Attempt any two of the following. [10]

1. Give an example of repetition, append elements and concatenation of strings and sequences using the operators.'''

**2.** Swap the following two tuples.

tuple1 = (11, 22)

tuple2 = (99, 88)

3. a. Create a dictionary in python.

b. Show that, with an example key must be unique in python dictionary.

# Q.3 Attempt any One of the following. [10]

1. For the matrix

A=15

-15 10 11

1. find its transpose.
2. find its determinant.
3. find its inverse if exists.
4. reduce the matrix into row echelon form.
5. find its rank.

2. Use Sympy to obtain Minor and Cofactor of the following matrix.

A=

**Viva [5]**

**Slip No.:-2**

# Q.1 Attempt any two of the following. [10]

**1.** Write Simple “Hello”and “Good Morning” Program in python?

2. If x and y are false then find the value of "(x or y)" and “(not x or not y)”

3. Give an example of the comparison between integer, floating point and strings.

**Q.2 Attempt any two of the following. [10]**

1. Using python find the length of following variables.

a. var1=’Hello Python’

b. var2=’Good Morning’

c.var3=’Hello Mam’

2. Copy element 44 and 55 from the following tuple into a new tuple**.**

**''** tuple1 = (11, 22, 33, 44, 55, 66)”

3.Construct the following matrices:

1. Row matrix [3,4,5]
2. Column matrix with entries 2, 4, 7
3. Identity matrix of order 5
4. Zero matrix of order 2Χ3
5. Ones matrix of order 4Χ3

# Q.3 Attempt any One of the following. [10]

1.

16 10 11

For the matrix [ 18 −7 7 ]

−1 9 −13

a) find its transpose.

b) find its determinant.

c) find its inverse if exists.

d) reduce the matrix into row echelon form.

e) Insert new row vector at second position as [0 5 4] in matrix A .

2.Solve the following system of linear equation using Cramer’s rule.

**Viva [5]**

**Slip No.:-3**

# Q.1 Attempt any two of the following. [10]

1. Write a function that calculates queotient and remainder when'a' divided by'b'.'''

a)(-7,2) b)(1000,7)

2. Write a function that calculates area and circumference of a circle if radius is given.'''

a) circle(6) b) circle(2)

3.Using the operators + and \* find "XY" + "pq", "X" + "9" + "Y" and "Hello".

# Q.2 Attempt any two of the following. [10]

1. Write a python program to remove the last element from a list.

1. List 1=[‘math’,’stat’,’computer’,’electronics’,’IKS’]
2. List2=[‘EVS’,’PPM’,’Practical’]

2.Add the element ‘Learn Coding’ in a set var={11,15.7,"MATH"}

3. Show the sequence of numbers that would be generated by each of the following range expressions.

a) range (5) b) range (3, 10)

# Q.3 Attempt any One of the following. [10]

2 1

**1.** For vector u= [ 5 ] and v= [ 0 ]

−3 −2

Find a) u+v

b)4u

c)u-v

d)2.u+3.v

e**)** Display identity matrix of order 3 by using Sympy module.

2. Find inverse of matrix using Adjoint method

A=

**Viva [5]**

**Slip No.:-4**

# Q.1 Attempt any two of the following. [10]

1) Find the value of and using math module in python.

2)Write a program in Python that repeatedly asks the user to enter a letter and builds up a string consisting of only the vowels that the users entered.

3) Complete the following program to multiplication table of given number and write the outputs for x = 3, 7.

# Q.2Attempt any two of the following. [10]

* + 1. For the following matrices

A= B=

Find A+B, A-B, A^-1, B\*A, B^-1 .

* + 1. Use Sympy to obtain lower triangular matrix of **A=**

* + 1. Use Sympy to Apply LU decomposition method for the following matrix.

A=

# Q.3 Attempt any One of the following. [10]

1. Solve the following system using Guass Jordan method.

1. For the matrix ,

* + - 1. find its transpose.

b. find its nullspace

1. find its inverse if exists.
2. reduce the matrix into row echelon form.
3. find its rank.

**Viva [5]**

**Slip No.:-5**

# Q.1 Attempt any two of the following. [10]

i) Write a function that calculate sum and products of three number 6,7,8 in python.''

ii)Given the string s = 'abcdefghij'.

index: 0 1 2 3 4 5 6 7 8 9

letters: a b c d e f g h i j

calculate: s[2:5], s[:5], s[5:], s[-2:5], s[:], s[1:7:2], s[::-1].'''

iii) Write a program to print list and obtain their length

# Q.2 Attempt any two of the following. [10]

i)Write a Python program using tuple that swap the values of two variable.

ii) **)** Complete the following program to multiplication table of given number and write the outputs for x = 5, 7.

def table(x):

for i in range(1, ):

print( )

iii)Use Sympy construct the following matrix.

1. Identity matrix of order 3
2. Construct zero matrix of order 5Χ4
3. Diagonal matrix whose diagonal entries are 1,2,3
4. Create matrix of order 2Χ3 whose all entries are one.
5. Row matrix [1,4,5]

# Q.3 Attempt any One of the following. [10]

i) For the following matrices

A= B=

Find 2A+B, A-B, A^-1, B\*A, AB .

ii) Solve the following system using LU decomposition method.

**Viva**

**Slip No.:-6**

# Q.1 Attempt any two of the following. [10]

i) Write a python code to concatenate two strings “Good” and “Friday”.

ii) Give an example of the comparison between integer, floating point and strings**.**

iii) Write a program to combine and repeat a list. Where,

s = [1,2,3,4]

t = [5,6,7,8,9]

# Q.2 Attempt any two of the following. [10]

i) Write a python program to remove the last element from a list.

1. List 1=[‘math’,’stat’,’computer’,’electronics’,’PPM’]
2. List2=[‘EVS’,’IKS’,’Practical’]

ii) Find Union and Intersection of the following sets.

var1={133,76,87}

var2={22,76,34}

iii) Attempt the following.

1. Create a dictionary in python
2. Show that, duplicate value is allowed in dictionary.
3. show that, key must be unique in python dictionary.

# Q.3 Attempt any One of the following. [10]

i)  **16 10 11**

For the matrix [ 18 −7 7 ]

−1 9 − 13

a) find its transpose.

b)find its determinant.

c)find its inverse if exists.

d)reduce the matrix into row echelon form.

ii)Find inverse of matrix using Adjoint method

A=

**Viva 5**

**Slip No.:-7**

# Q.1 Attempt any two of the following. [10]

**i)** Write a function that gives sin,cos and log of a given number**.**

a) f(1.2)

b)f(math.pi)

ii) Check the type of the 10,21.6 ,”SYBSC”using python.

iii)Evaluate the following.

1. (1+1)\*(3+3)-(4\*4)
2. 5+(4-2)\*2+6%2-4+3-(5-3)/1

# Q.2 Attempt any two of the following. [10]

i) Write a program in Python that repeatedly asks the user to enter a letter and builds up a string consisting of only the vowels that the users entered.

ii)Write a program enter 9 digits and pick their elements.

iii)Using python find the length of following variables.

a. var1=’Hello Python’

b. var2=’Good Morning’

c.var3=’Hello Mam’

# Q.3 Attempt any One of the following. [10]

i)Solve the following system using Guass elimination method**.**

**ii)** Find Upper triangular matrix of A=

**Viva 5**

**Slip No.:-8**

# Q.1 Attempt any two of the following. [10]

i) Display matrices A= [1 2 1 ] .

1 1 2

Insert new row vector at second position as [0 5 4] in matrix A .

ii)Write a Python program using tuple that swap the values of two variable.

iii)Write a program to pick out part of a string 'helllo world'.''' a = 'hello world'

# Q.2 Attempt any two of the following. [10]

i)Write a program in Python that repeatedly asks the user to enter a letter and builds up a string consisting of only the vowels that the users entered.

ii) Find the value of the following expressions if x and y are true and z is false.

1. (x or y) and z
2. (x or y) and not z
3. (x or not y) or(x and z)'''

iii) Write a function that calculates area and circumference of a circle if radius is given.

a)circle(6) b)circle(2) c)circle(5)

# Q.3 Attempt any One of the following. [10]

1. Find minor and cofactor of the following matrix.

**A=**

ii)Solve the following system of linear equation using Cramer’s rule.

**Viva 5**

**Slip No.:-9**

# Q.1 Attempt any two of the following. [10]

i) Apply LU decomposition method for the following matrix.

A=

1. Display Matrices

A= B=

Also display first row of matrix A

1. Explain for loop and while loop with suitable examples.

# Q.2 Attempt any two of the following. [10]

i) Print all positive divisors of given number n=24.

ii) Sort a tuple of tuples by ascending order.

tuple1 = (44, 11, 66, 22, 33, 55)

iii)Write a function that calculates quotient and remainder when'a' divided by'b'.**'**

a)(-7,2) ,b)(5,2) ,c)(21,7)

# Q.3 Attempt any One of the following. [10]

i) Solve the following system using LU decomposition method.

1. Find lower triangular matrix of A=

**Viva 5**

**Slip No.:-10**

# Q.1 Attempt any two of the following. [10]

# i) Find Upper triangular matrix of A=

ii)16 10 11

For the matrix [ 18 −7 7 ]

− 1 9 −13

a) find its transpose.

b)find its determinant.

c)find its inverse if exists.

d)reduce the matrix into row echelon form.

iii)Write a function that calculate square of a number 17 and 19 in python.

# Q.2 Attempt any two of the following. [10]

# i) Using the operators + and \* find "XY" + "pq", "X" + "9" + "Y" and "Hello"

ii)Given the string

s = 'abcdefghij'. index: 0 1 2 3 4 5 6 7 8 9

letters: a b c d e f g h i j

# calculate: s[2:5], s[:5], s[5:], s[-2:5], s[:], s[1:7:2], s[::-1].

iii)Using python find the length of following variables.

a. var1=’Hello Python’

b. var2=’Good Morning’

c.var3=’Hello Mam’

# Q.3 Attempt any One of the following. [10]

**i**) Solve the following system using LU decomposition method.

ii) Find minor and cofactor of the following matrix.

A=

**Viva 5**