KSR HI-TECH CBSE SR.SEC SCHOOL

July Monthly Test

CLASS : XII **TIME :2:15 hours**

SUBJECT :INFORMATICS PRACTICES **MARKS :60**

General Instruction:

- This question paper contains 4 Parts.
- Answer the questions after carefully reading the text.

I. Answer the following: **(3 x 1 = 3)**

1.Which of the following is contained in NumPy library?

a) n-dimensional array object b)Series c)DataFrame d)plot

2. Point out the correct statement:

a) NumPy main object is the homogeneous multidimensional array

b) In Numpy, dimensions are called axes

c) Numpy array class is called ndarray

d) All of the Mentioned

3. To test the linear relationship of y(dependent) and x(independent) continuous variables, which of the following plot is best suited:

a) scatter b) histogram c)bar chart d)pie chart

II. Answer the Following: **(14 marks)**

1. Expand ndarray. (1)
2. How can we determine the number of elements in a 2D array? (1)
3. What is array slicing? (1)
4. When the fromiter() is preferred over array()? (2)
5. What is the purpose of order argument in empty().What do 'C' and 'F' stands for? What is the default value of order argument? (2)
6. Differentiate split() from hsplit() and vsplit(). (2)
7. Write the similarities and differences between python list and ndarray. (2)
8. Compare extract() and compress() with example. (3)

III. Answer the Following: **(3 marks)**

1. Find the output: (1)

```
a= np.linspace(2.5,5,6)
print(a)
```

2. Find the output: (2)

```
import numpy as np
a=np.array([[0,2,4,6],[8,10,12,14],[16,18,20,22],[24,26,28,30]])
print(a)
```

```
print(a[:3,3:])
print(a[1::2,:3])
print(a[-3:-1,-4::2])
print(a[::-1,::-1])
```

IV. Write individual numpy programs for the following: (40 Marks)

1. To show first 20 even numbers. (1)
2. To create a numpy array with all values as True. (1)
3. To create an array of 10 sevens. (1)
4. Count number of rows and columns of a given matrix. (1)
5. Reverse the array. (1)
6. Convert a tuple into array. (1)
7. Repeat the array trice. (1)
8. Compare two arrays and print a single Boolean value according to their equality. (1)
9. Find maximum value and its index position from one dimensional array (2)
10. Find second largest number from one dimensional array (2)
11. Find the most frequent value in an array. (2)
12. To find the union of two arrays. (2)
13. To add an extra column to a numpy array. (2)
14. To Test whether none of the elements of a given array is zero (2)
15. To convert a given array into a list and then convert it into an array again. (2)
16. Create a 3*4 matrix filled with the values from 10 to21. (2)
17. Show the sum of all elements in array and also show the sum of each row and column. (2)
18. Search first array elements in second array. (2)
19. Compute the covariance matrix of two arrays. (2)
20. Compute the Pearson's product-moment correlation coefficients of the two arrays. (2)
21. Print all subsets of a 1D Array. If A {1, 3, 5}, then all the possible/proper subsets of A are { }, {1}, {3}, {5}, {1, 3}, {3, 5} (3)
22. Write a program that accepts 10 numbers from keyboard for one-dimensional array and transfer the positive number to another one-dimensional array. (3)
23. To plot the linear relationship between the number of hours a student studies and the percentage of marks that student scores in an exam. If we plot the independent variable (hours) on the x=axis and dependent variable(percentage) on the y-axis, linear regression should give us a straight line that best fits the data points represented by the equation of the straight line y=ax+b. (4)