ARTIFICIAL INTELLIGENCE- 417

GRADE 10

DATA SCIENCE – PRACTICAL

STATISTICAL LEARNING

1. Write a menu-driven Python program to calculate the mean, mode and median for the given data:

   [5,6,1,3,4,5,6,2,7,8,6,5,4,6,5,1,2,3,4]

```
import statistics
list1 = [5,6,1,3,4,5,6,2,7,8,6,5,4,6,5,1,2,3,4]
print("1. Mean 2. Mode  3. Median")
ch = int(input("Enter your choice:  "))
if ch ==1:
    print("Mean = ",statistics.mean(list1))
elif ch ==2:
    print("Median = ",statistics.median(list1))
elif ch ==3:
    print("Mode = ",statistics.mode(list1))
else:
    print("Invalid choice!! ")
```

2. Write a menu driven Python program to calculate variance and standard deviation for the given data:

   [33,44,55,67,54,22,33,44,56,78,21,31,43,90,21,33,44,55,87]

```
import statistics
list1 = [33,44,55,67,54,22,33,44,56,78,21,31,43,90,21,33,44,55,87]
print("1. Variance 2. Standard Deviation")
ch = int(input("Enter your choice:  "))
if ch ==1:
   print("Variance = ",statistics.variance(list1))
elif ch ==2:
   print("Standard Deviation = ",statistics.stdev(list1))
else:
   print("Invalid choice!! ")
```

DATA VISUALIZATION

3. Write a Python program to represent the data on the ratings of Programming Languages on Bar graph. The sample data is given as: Java, Python, C++, C, PHP. The rating for each game is as: 4.5, 4.8, 4.7, 4.6, 4.3.

4. Consider the following data for monthly sales of one of the salesmen for 6 months. Write a Python program to plot them on the line chart.

Month	January	February	March	April	May	June
Sales	2500	2100	1700	3500	3000	3800

Apply the following customizations to the chart:

- Give the title for the chart – "Sales Stats"
- Use the "Month" label for X-Axis and "Sales" for Y-Axis.
- Display legends.
- Use red colour for the line.
- Use dot marker with fill colour black.

5. In an engineering college, number of admissions stream wise in the current year are:
   Civil =15, Electrical =35, Mechanical =40, Chemical = 20, Computer Science = 50
   Write a Python program to print above information on a circular pie chart, and create a wedge for Computer Science stream.

6. Marks of four students in three different subjects are available in three lists. Write a Python program to create Boxplot for the following data with their unique labels.

   Maths = [74.5,76.5,95,86]
   Science = [89,95,79,92]
   SST = [87,91,82, 72]

7. The height and weight of ten students are shown in the table. Write a Python program to construct a Scatter plot for the given information.

Height (cm)	120	145	130	155	160	135	150	145	130	140
Weight (cm)	40	50	47	62	60	55	58	52	50	49

8. Given the following set of data:

   Marks of 16 Students are:

   [22, 87, 5, 43, 56, 73, 55, 54, 11, 20, 51, 5, 79, 31, 27].

   Write a Python program to plot a Histogram for the given data.