Course: B.Tech. Computer Science and Engineering
(Artificial Intelligence & Machine Learning)
Subject: Foundation of Data Analytics, Subject Code: ETCS110
Semester: II

Time: 03 Hours **Max Marks: 70**

Instructions to the Students:

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of short answer type. All questions are compulsory. Each question carries 2 marks.
3. Section B comprises 8 long answer type questions out of which students must attempt any 5. Each question carries 10 marks.
4. Do not write anything on the question paper.

Q.No.	SECTION –A (SHORT ANSWER TYPE QUESTIONS)	Marks
1. a.	Explain the python interpreter.	(2)
b.	What are the essential conditions for any distribution to be Binomial distribution?	(2)
c.	Explain two Real Life examples where Poisson distribution is followed.	(2)
d.	Write the python code to sum the n even numbers.	(2)
e.	Explain the difference between mutable and immutable structures with example.	(2)
f.	Discuss range() and init() methods used in class definition.	(2)
g.	What is the discrete random variable and its properties?	(2)
h.	Write the python code for Binary searching.	(2)
i.	What is the difference between CSV and JSON?	(2)
j.	Write python code for Line plot.	(2)

SECTION –B (LONG ANSWER TYPE QUESTIONS)

2.	Calculate the Mean and Variance of Poisson distribution.	(10)
3.	Analyse the Normal distribution function curve with derivation. Also Explain how gaussian distribution is different from normal distribution.	(10)

4. Write the python code for the following given expression using loop: (10)

```
&
&&
&&&
&&&&
&&&
&&
&
```

Also write the code for above expression using strings of python.

5. a. Write the python code to create the DICTIONARY and how it is different from LIST. (5)

   b. Write the program to illustrate the difference between continue and break statement. (5)

6. a. Ajay run the marathon. In the Olympic race held in Delhi, the runners mean time is 2 hours 15 min with a standard deviation of 4.5 min. In Athens, the runners mean time is 2 hours 16 min with a standard deviation of 3 min. Ajay ran with 2 hours 17 min and in Athens with 2 hours 19 min. Calculate the Z score for both times. Also, which was the better performance and why. (5)

   b. Write the python code for the sorting the given list using insertion sort: 4, 5, 1, 8, 6, 2, 7. (5)

7. Create the two 3x3 matrix using NumPy library. Also preform the following operation (10)

   a. Matrix Addition

   b. Matrix Multiplication

8. a. Demonstrate a python code, how a Class would be converted into JSON object with an example. (5)

   b. Write a python code to write and read in the text file. (5)

9. Explain the function of Matplotlib library. Write the code for design of Histogram of different colours, legend and labels. (10)

===END OF PAPER===