School of Computer Science Engineering and Technology

Course- BTech
Course Code- CSET-214
Year- 2024-25
Date-

Type- Specialization Core
Course Name- Data Analysis using Python
Semester- Odd
Batch-

Lab # No. (10) Bernoulli distribution, Binomial distribution, Poisson Distribution

CO Mapping

Lab No.	Name	CO1	CO2	CO3
10	Bernoulli distribution, Binomial distribution, Poisson distribution	✓	✓	✓

Note: Import the required function from Scipy library.
1.a) Create an instance of Bernoulli's distribution with the parameter p=0.8. Use bar plot to visualize the PDF of Bernoulli's experiment. Add suitable title and x-axis labels and y-axis labels.

b) A biased die that has a 60% probability of landing on 6 (considered as "success") and 40% probability of landing on any other number (considered as "failure"). WAP use the Bernoulli distribution from the scipy.stats library to calculate (i) The probability of the die landing on 6 (success).(ii) The mean and variance of the Bernoulli distribution.

2. a) Find the expected number of trials with exactly 0 head, 1 head, 2 heads, 3 heads. Plot the binomial distribution for the experiment of flipping 3 fair coins together and performing 100 trials.

b) A quiz consists of 10 multiple-choice questions, each with a 75% chance of answering correctly. Simulate the performance of 200 students. (i) Calculate and plot the PMF that a student score exactly 8 or 9 or 10 using binomial probability distribution. (ii)Find the CDF for a student scoring up to 9 questions correctly.

3. a) A website receives 10 visits per minute on average. Simulate the number of visits for each of the next 60 minutes. (i) Plot the distribution of visits.(ii) Calculate the probability of receiving exactly 12 visits in a minute. (iii) Find the PPF value at the 90th percentile.

b) If a call centre receives an average of 5 calls per hour. Plot the Poisson's distribution of calls.   (i) Calculate the probability of receiving exactly 3 calls in an hour. (ii) Find the CDF value for receiving up to 3 calls.