**School of Computer Science Engineering and Technology**

Course- B.Tech. Type- Core

Course Code- CSET240 Course Name- Probability and Statistics

Year- 2023-24 Semester- ODD

Date-28-08-2023 to 01-09-2023 Batch-All

**Lab (Week -5)**

**Q1:** Sarah is rolling a fair eight-sided die four times. Let the random variable Z represent the sum of the four numbers rolled. Calculate the probability distribution for Z. **(Within Lab)**

**Q2:** A university is conducting an analysis of its students' performance in a physics class. The professor has collected data on the number of correct answers for each student in a recent quiz. Let's consider the following discrete random variable: X = "Number of Correct

Out of 60 students, the professor recorded the following distribution of the number of correct answers:

Number of Correct Answers | Frequency |

0 5

1 7

2 10

3 20

4 12

5 6

a) Calculate the mean and variance of the random variable X**. (Within Lab)**

b) If a student is randomly selected from the class, what is the probability that they scored at least 4 correct answers on the quiz? **(Within Lab)**

**Q3.** Draw 2000 random numbers from the following distribution:

| X | P(X=x) |
| --- | --- |
| 1 | 0.3 |
| 2 | 0.4 |
| 3 | 0.2 |
| 4 | 0.1 |

You are not allowed to use any inbuilt function. You have to use the concepts of the Probability Mass Function (PMF) and Cumulative Distribution Function (CDF). **(Within Lab)**