**School of Computer Science Engineering and Technology**

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| **Course**-B.Tech. | **Type-** Core |
| **Course Code-** CSET240 | **Course Name-** Probability and Statistics |
| **Year-** 2024 | **Semester- 3rd sem (**Odd) |
| **Date-** 04/11/2024 - 08/11/2024 | **Batch-** 2023-2027 |

**CO-Mapping**

| | **CO1** | **CO2** | **CO3** |
|---|---|---|---|
| **Q1** | | | √ |
| **Q2** | | | √ |
| **Q3** | | | √ |
| **Q4** | | | √ |

**Objectives**

1. Students will be able to verify real life problems almost follow a normal distribution by using central limit theorem.
2. Students will be able to implement real life problems based on Sampling.

**Q1.** Most graduate schools of business require applicants for admission to take the Graduate Management Admission Council's GMAT examination. Scores on the GMAT are roughly normally distributed with a mean of 527 and a standard deviation of 112.

a) What is the probability of an individual scoring above 500 on the GMAT?
b) How high must an individual score on the GMAT to score in the highest 5%?
c) What is the probability of an individual scoring between 527 to 554 on the GMAT?

**Q2.** Create a random set of numbers from the given dataset.csv file. Create a sample by randomly selection 40 numbers. Create 1000 such samples from the file. Plot the sampling distribution. Repeat the exercise with 2000 samples each of size 150.

**Q3.** Simulate the central limit theorem by drawing random numbers from the following distributions. Sample size is 40. You can draw 1000 samples.

1. Normal distribution with mean 18, std deviation 20.
2. Poisson distribution with lambda 10.
3. Exponential distribution with lamda 20.

**Q4.** It is believed that students in BU spend on average 75 minutes daily on texting using their mobiles and the corresponding standard deviation is 25 minutes. Data from a sample of 110 students were collected for calculating the amount of time spent in texting. Calculate the probability that the average time spent by this sample of students will exceed 82 minutes.