



**Daffodil International University**  
**Department of Electrical and Electronic Engineering**  
**Faculty of Engineering**  
**Midterm Examination, Summer – 2026**

Course Code: 0542 221  
 Section: A,B,C,D,E,F,G  
 Full Marks: 25

Course Title: Probability and Statistics

Level-Term: L2-T1

Exam Date: June 29, 2026

Teacher's Initial: JA, TRS, UJM

Time: 1.5 Hours

**\*\*\* Answer the Following questions sequentially.**

[The second right most column indicates the course outcomes(COs) with respective Bloom's level and the right most column indicates the allocated marks.]

- Q1.** An electrical engineering laboratory is studying the performance of 120 induction motors used in an industrial plant. Due to time and budget constraints, they randomly select 25 motors for analysis. For each motor, they record: **CO-1 5**  
**C(2)**

Power consumption (kW), Motor speed (RPM), Motor condition

- i) From the scenario above, identify population, sample, and variables "type" and "level of measurements".
- ii) Compare population and sample with suitable examples.
- iii) Explain measure of central tendency. Classify different types of central tendency.

- Q2.** An Electrical Engineering student is analyzing the current consumption (in mA) of 20 electronic sensors used in a smart monitoring system. The recorded current values are: **CO-3 8**  
**C(3)**

12, 18, 25, 30, 22, 35, 40, 28, 15, 32, 45, 50, 38, 27, 20, 42, 54, 48, 33, 24

- i) Construct a frequency distribution table using an appropriate class interval.
- ii) Illustrate any two suitable graphs for the above data.
- iii) Calculate the percentage of sensors having current consumption less than or equal to 35 mA.

- Q3.** A laboratory investigates the power losses (in watts) of two transformer designs under similar loading conditions. **CO-3 12**  
**C(3)**

|               |    |    |    |    |    |
|---------------|----|----|----|----|----|
| Transformer X | 18 | 20 | 19 | 21 | 25 |
| Transformer Y | 12 | 25 | 28 | 30 | 35 |

- i) Calculate the coefficient of skewness for each transformer design and interpret the results.
- ii) Calculate the coefficient of kurtosis for each transformer design and interpret the results.
- iii) Based on the skewness and kurtosis values, Illustrate the shape of each distribution and compare its peakness with a normal distribution.