



Daffodil International University
Department of Electrical and Electronic Engineering
Faculty of Engineering
Midterm Examination, Fall – 2025

Course Code: 0542 221

Section: A,B,C

Full Marks: 25

Course Title: Probability and Statistics

Level-Term: L2-T2

Exam Date: October 20, 2025

Teacher's Initial: JA

Time: 1.5 Hours

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

[The figures in the right-hand margin indicate marks allocated for that question.]

[COs represent learning outcomes of the course.]

[All the symbols carry their usual meaning.]

- Q1. Compare** between descriptive and inferential statistics with example. **CO-1 5**
 An electrical engineering lab wants to measure the efficiency of 100 transformers used in a small power grid. They select 20 transformers randomly for testing. For each transformer, they record: **C(2)**
- i) Temperature rise ($^{\circ}\text{C}$)
 - ii) Input voltage (Volts)
 - iii) Load type
- From the scenario above, **identify** population, sample, and variable (with types).
- Q2. An Electrical Engineering student is monitoring the resistance (in ohms) of 18 resistors collected from a laboratory batch. The measured resistances are:** **CO-3 8**
 25, 33, 41, 18, 55, 62, 11, 48, 29, 36, 70, 84, 50, 40, 66, 72, 22, 58 **C(3)**
- i) **Construct** a frequency distribution table using an appropriate class interval.
 - ii) **Illustrate** two appropriate graphs for the above data.
 - iii) **Calculate** the percentage of resistors have voltage less than or equal to 50 V.
- Q3. Two types of voltage regulators are tested to check their performance in maintaining stable voltage (V) across sensitive circuits over one week. The recorded voltage drops are:** **CO-3 12**
C(3)
- | | | | | | |
|-------------|----|----|----|----|----|
| Regulator A | 48 | 50 | 49 | 51 | 47 |
| Regulator B | 55 | 60 | 58 | 57 | 62 |
- i) **Identify** which regulator provides more consistent voltage regulation by applying the most appropriate statistical method.
 - ii) **Determine** the coefficient of skewness for each regulator and interpret the results.
 - iii) **Illustrate** the approximate shape of the distribution based on your interpretation of skewness.