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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 C(2)** **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:

i) Temperature rise (°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 C(3)** **8**

25, 33, 41, 18, 55, 62, 11, 48, 29, 36, 70, 84, 50, 40, 66, 72, 22, 58

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 C(3)** **12**

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.