



# Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science and Engineering

Mid Semester Examination, Spring-2024

Course Code: CSE223 Course Title: Digital Electronics

Level: 2 Term: 2 Batch: 63

Exam Duration: 1.5 Hours

Marks: 25

## Answer ALL Questions [Optional]

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

|    |    |   |   |     |
|----|----|---|---|-----|
| 1. | a) | Show the conversion of following number system:<br>(i) Convert Decimal 2625.225 to Octal and Hexadecimal.<br>(ii) Convert base-5 number (4021.12) <sub>5</sub> to Decimal   | 4 | CO1 |
|    | b) | Illustrate the circuit diagram from following Boolean expression using universal NAND gate.<br>$AB' + BC'(A' + B)$  | 4 |     |
| 2. | a) | Build a simplified expression from following Boolean expression.<br>$F(A, B, C, D) = (A' + B')(C' + D')(B' + D)$  | 4 | CO2 |
|    | b) | Develop a standard form the Boolean function $F = (A' + B)(A + D')C$ using Sum of Minterm.  | 4 |     |
|    | c) | Apply the simplification of the following Boolean function using K-map:<br>$F(A, B, C, D) = \Sigma(0, 2, 4, 7, 9, 12, 13) + \Sigma d(1, 8, 11, 15)$   | 4 |     |
| 3. | a) | You have been tasked with creating a Safety Gadget. You want to establish a CCTV camera and temperature detection system in the system. Configure a motion detection device to identify any unlawful actions. You now aim to control all outputs using a circuit. If movement is detected in your residence and the CCTV camera verifies it, you will get a "Call". If the temperature is high, you will get an SMS on your mobile phone. Construct a truth table, Boolean expression, and circuit schematic for this system. | 5 | CO3 |