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# 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)5 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) = Σ(0, 2, 4, 7, 9, 12,13) + Σ 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** |