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# Daffodil International University

## Faculty of Science & Information Technology

**Midterm Examination, Spring 2023**

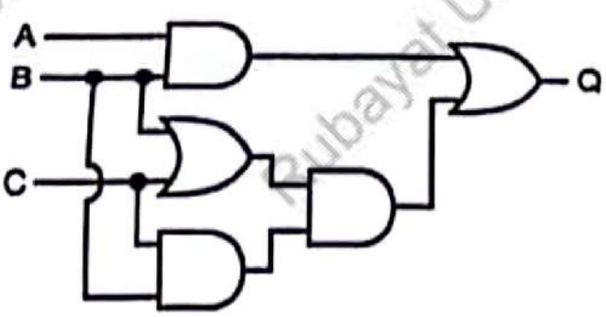
**Course Code: CSE223; Course Title: Digital Electronics**

**Level: 2 Term: 2 Batch: 60**

**Time: 1.5 Hrs** **Marks: 25**

**Answer ALL Questions**

***[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 the following number system:<br>1) $3245.34_6 = (?)_{10}$ 2) $6739_{10} = (?)_5$ | **4** | **CO 1** |
| | ***b)*** | Construct a Logic Circuit from the following function using Universal NOR gate only.<br>$F = AB' + BC' + CD'$ | **4** | |
| **2.** | ***a)*** | $F = BD + AC + D$<br>Translate the following Boolean expression into Product of Maxterms. | **4** | **CO 2** |
| | ***b)*** | <br>Identify the Boolean Expression of 'Q' from the following circuit diagram. | **4** | |
| | ***c)*** | Simplify the following equation using K-map:<br>$F(A, B, C, D) = \Sigma(0, 1, 2, 5, 8, 9, 12, 15) + \Sigma\, d(4, 6, 7, 13)$ | **4** | |
| **3.** | ***a)*** | Suppose you are working in a Software Company. They have assigned you to develop a Smart Home system. Your plan is to set up a Monitoring device and temperature detection system in your house. You need to set a motion detection device to detect unwanted movement. Now, you want to control all outputs using a circuit. In that case, you want to get an "ALARM" if any movement occurs in your house and also the monitoring device confirmed it. You will get an "SMS" on your cell phone if the temperature is high. Now you have to Develop a Truth table, Boolean expression and Circuit diagram for this system. | **5** | **CO 3** |