**Bangladesh University**
**Department of CSE**
**Mid Term Examination, Summer Semester 2026**

**Course Code: CSE-3205**
**Course Title: Digital Electronics and Pulse Techniques**
**Course Teacher: Anisa Walida**
**Batch: 69 (Evening)**

Type your text

**Time: 1.5 hours** **Total Marks: 4×5=20**

***Answer any 4 questions from below.***

| No. | | Marks |
|---|---|---|
| 1. | (a). State Moore's Law. | 1 |
| | (b). Why are digital systems preferred over analog systems in modern electronic devices? | 2 |
| | (c). Draw the circuit and truth table of a 2 input NOR gate. | 2 |

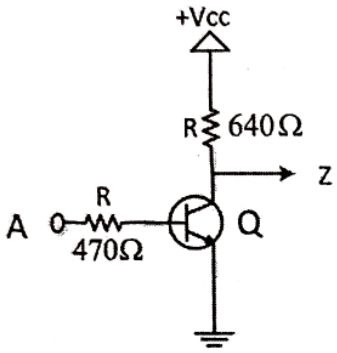



Figure 1

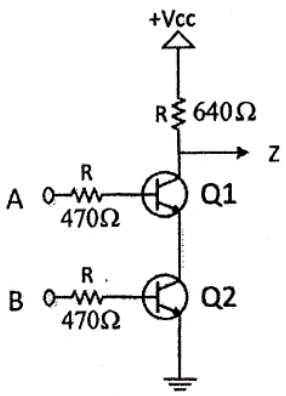



Figure 2

| | | |
|---|---|---|
| 2. | (a). Identify the logic gate implemented by the circuits shown in Figures 1 and 2? | 1 |
| | (b). Determine the output of the circuit in Figure 2 for the following input conditions $A = 0$ and $B = 1$. | 1 |
| | (c). Using the circuits shown in Figures 1 and 2, implement an appropriate logic gate. Draw the complete circuit diagram and construct its truth table | 3 |
| 3. | (a). What is noise immunity? | 1 |
| | (b). Explain the output of a 2 input DTL NOR gate where the input condition is<br>i) A=0 and B=0<br>ii) A=1 and B=1 | 2 |
| | (c). Draw a TTL open collector NAND gate and show the different phases. | 2 |
| 4. | (a). State the different TTL subfamilies | 1 |
| | (b). Explain the operation of a DTL NOR gate with the help of its truth table. | 2 |
| | (c). Compare RTL, DTL and TTL. | 2 |

**Scenario 1 (For Question No. 5):**
Two independent sensors monitor a chemical storage tank. An alarm should sound if **either sensor detects a fault**. To reduce the number of logic gates, the designer wants to connect the outputs of both TTL gates directly to a common output line.

| | | |
|---|---|---|
| 5. | (a). What are the states in a tristate output configuration? | 1 |

**P.T.O.**

**(b).** Why does the totem-pole output configuration provide faster switching? **2**

**(c).** Based on scenario 1, which TTL output configuration should be used ? Justify your answer. **2**