# Assignment

**Course Title: Embedded System and IoT**
**Course Code: CSE233**
**Marks: 05**
**Section: 61_Q**

**Note:**

- You must submit a soft copy (PDF) of your assignment in the BLC.
- Additionally, submit a printed hard copy during the class.

**Guidelines:**

- Your assignment should be no more than 10 pages, including figures and references.
- Plagiarism and the use of AI-generated tools are strictly prohibited.
- To enhance the quality of your answers, include relevant figures, images, and architectural diagrams related to the topics.

| Task | Last Digit of ID |
|---|---|
| Write about **3 common security problems in IoT systems** (like insecure passwords, unencrypted data transfer, firmware vulnerabilities) and propose simple mitigation techniques. | **1,3** |
| Prepare a short report explaining what is **cloud computing vs edge computing** in **the context of IoT systems**. Compare benefits & limitations of each (like latency, bandwidth, security, cost), and suggest when it is better to process data at the edge vs send it to the cloud | **2,4** |
| Explain how the following sensors work and how they are typically used in IoT and embedded systems: **DHT11** (Temperature & Humidity sensor), **LDR** (Light Dependent Resistor),**Ultrasonic Sensor** (like HC-SR04 for distance measurement) | **5,7** |
| Why is data processing & analytics important in IoT? Discuss **how raw sensor data is often filtered, aggregated, or analyzed** to make it meaningful, reduce bandwidth, and improve decision making, with examples. | **8,0** |
| Prepare a short comparative analysis of **Wi-Fi, Bluetooth, and ZigBee protocols** for short-range IoT communication. Highlight differences in data rates, power consumption, range, cost, and typical applications. | **9**,6 |