

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular/Backlog), December 2024

B.Tech, Semester V

Roll No.....

EE1222 Introduction to IoT and Automation
Projects/EE1410 IoT Protocol and Applications

Time: 2.30 hours Max. Marks: 30

Instructions to students:

1. Do not write anything other than your roll number on the question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.
4. Use of Programmable Calculator is not allowed.

Q.1A	Draw and explain the use of RFID Technology in access control of entry gate in office.	03(CO 2)
Q.1B	What is Zigbee? How does Zigbee differ from other wireless protocols like Wi-Fi and Bluetooth? What are the key components of a Zigbee network? Explain them.	03(CO 2)
Q.2A	What is MQTT? What are the main components of MQTT? Explain publisher subscriber model using suitable diagram.	03 (CO 2)
Q.2B	You want to control an LED using a Raspberry Pi. You have a simple circuit with the following components: • LED • 220-ohm resistor • Raspberry Pi (with GPIO pins) Write a Python program to blink the LED connected to GPIO pin 17 on the Raspberry Pi. The LED should blink on and off every second.	04 (CO 4)
Q.3A	Design a smart washroom using NodeMCU. The system should be able to turn on the light when any movement is detected in the washroom. List all the components required. Draw circuit diagram and write the program for the system.	05 (CO 1, CO 4)
	OR	

Q.3A	Design a bidirectional counter system using NodeMCU. The system should increase the count when a person enters the room and decrease the count when person leaves the room. List all the components required. Draw circuit diagram and write the program for the system.	05 (CO 1, CO 4)
Q.3B	Design a system to detect the distance of any object using Raspberry Pi. It should glow the LED when the distance of an object is less than 10 cm. Draw circuit diagram and write the python program/pseudo code for the system. You can choose the sensor required.	05 (CO 1, CO 4)
Q.4	Imagine you are in your office, and you have to detect the room temperature of your home and accordingly control the fan using mobile. How will you do? Explain using neat and clean diagram with proper steps/pseudo code. Also give the detail of required sensor, microcontroller and server.	07 (CO 1, CO 3, CO 4, CO 5)