



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal-500043, Hyderabad

**B.Tech VII SEMESTER END EXAMINATIONS (REGULAR) - DECEMBER 2023**

**Regulation: UG-20**

**PRINCIPLES OF IOT**

**Time: 3 Hours (COMPUTER SCIENCE AND INFORMATION TECHNOLOGY) Max Marks: 70**

**Answer ALL questions in Module I and II**

**Answer ONE out of two questions in Modules III, IV and V**

**All Questions Carry Equal Marks**

**All parts of the question must be answered in one place only**

## MODULE – I

1. (a) Demonstrate the role of controller service in internet of things (IoT) systems. Discuss the characteristic of IoT. [BL: Understand| CO: 1|Marks: 7]
- (b) Determine the IoT levels for designing home automation IoT system including smart lighting and intrusion detection. [BL: Apply| CO: 1|Marks: 7]

## MODULE – II

2. (a) Write the function of centralized network controller in SDN. Differentiate between SDN and NVF. [BL: Understand| CO: 2|Marks: 7]
- (b) Discuss in detail about NETCONF server. Explain its significance in IoT system management with NETCONF-YANG. [BL: Understand| CO: 2|Marks: 7]

## MODULE – III

3. (a) List the steps to control the hardware components. Outline the working principles of a unipolar stepper motor in an IoT setup. [BL: Understand| CO: 3|Marks: 7]
- (b) Mention the applications of DC motors. Explain the techniques that can be used for speed control of a DC motor in IoT systems. [BL: Understand| CO: 3|Marks: 7]
4. (a) Differentiate uni polar with bipolar stepper motor with examples. Discuss in detail the role of relays in controlling AC power devices through IoT. [BL: Understand| CO: 4|Marks: 7]
- (b) Classify various types of buzzer. Explain the process of connecting a buzzer and LED to an IoT device for remote. [BL: Understand| CO: 4|Marks: 7]

## MODULE – IV

5. (a) Describe about Arduino board and explain how it is used in IoT applications. Differentiate between Arduino uno and ESP32. [BL: Understand| CO: 5|Marks: 7]
- (b) Write a Python program for switching LED/Light based on reading LDR reading. [BL: Apply| CO: 5|Marks: 7]
6. (a) Write the application areas of Raspberry Pi. Explain about different GPIO pins used in Raspberry Pi. [BL: Understand| CO: 5|Marks: 7]

- (b) Mention the key differences between serial, SPI, and I2C interfaces in terms of their characteristics and applications. [BL: Understand| CO: 5|Marks: 7]

### MODULE – V

7. (a) Illustrate RESTful architecture and its key principles in the context of designing a web API. [BL: Understand| CO: 6|Marks: 7]
- (b) Discuss various key factors to consider when designing a RESTful web API for IoT to ensure interoperability and ease of integration with IoT devices and applications. [BL: Understand| CO: 6|Marks: 7]
8. (a) List various cloud services for IoT. Differentiate between object storage, block storage and file storage in IoT applications. [BL: Understand| CO: 6|Marks: 7]
- (b) What is Xively cloud service? Describe the procedure of storing the data in Xively cloud for any application. [BL: Understand| CO: 6|Marks: 7]

