



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal-500043, Hyderabad

B.Tech VI SEMESTER END EXAMINATIONS (REGULAR) - JULY 2023

Regulation: UG-20

PRINCIPLES OF IOT

Time: 3 Hours CSE(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING) **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) Differentiate between IoT and M2M. Explain the function of centralized network controller in SDN. [BL: Understand| CO: 2|Marks: 7]
- (b) Describe 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) What is the use of DC motor? Explain the working principles of a unipolar stepper motor in IoT. [BL: Understand| CO: 3|Marks: 7]
- (b) Mention the techniques that can be used for speed control of a DC motor in IoT systems. Explain the controlling high-voltage circuits with a relay and an arduino. [BL: Understand| CO: 3|Marks: 7]
4. (a) Classify various types of light sensors. Discuss in detail the role of relays in controlling AC power devices through IoT. [BL: Understand| CO: 4|Marks: 7]
- (b) Explain the working principle of buzzer. Outline the process of connecting a buzzer and LED to an IoT device for remote. [BL: Understand| CO: 4|Marks: 7]

MODULE – IV

5. (a) Write the steps to download Arduino software. Summarize why energy consumption will be an issue when the IoT is implemented? [BL: Understand| CO: 5|Marks: 7]
- (b) Compare arduino uno and ESP32. Write a Python program for switching LED/Light based on reading LDR. [BL: Understand| CO: 5|Marks: 7]

6. (a) List out the Raspberry Pi interfaces. Demonstrate about the LED interfacing using Raspberry Pi. [BL: Understand| CO: 5|Marks: 7]
- (b) Outline the key differences between serial, SPI, and I2C interfaces in terms of their characteristics and applications. [BL: Understand| CO: 4|Marks: 7]

MODULE – V

7. (a) Differentiate between object storage, block storage and file storage in IoT applications with suitable examples. [BL: Understand| CO: 6|Marks: 7]
- (b) Explain in detail Python web application framework, and how does it facilitate the development of RESTful web APIs. [BL: Understand| CO: 6|Marks: 7]
8. (a) How to use a service platform while developing IoT applications? List and explain various cloud services for IoT. [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]

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