Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U5304

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Fifth Semester

Electrical and Electronics Engineering

21UEE504 - INTERNET OF THINGS FOR ELECTRICAL AUTOMATION

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Compare and contrast the differences between physical and logical designs in IoT architecture. Provide two key distinctions	CO1-U
2.	Describe a real-world scenario where APIs are used to facilitate communication between IoT devices and external systems.	CO1-U
3.	Classify the types of sensors commonly used for measuring temperature.	CO2- App
4.	Describe a situation where you would select an ultrasonic sensor for distance measurement.	CO2-App
5.	State the primary function of a solenoid in an electrical actuation system.	CO3-U
6.	Name two types of electrical systems commonly used in industrial applications.	CO3-App
7.	In an IoT project, describe a practical scenario where you would choose to use an Arduino microcontroller over a Raspberry Pi.	CO4-Ana
8.	Describe the primary function of an Integrated Development Environment (IDE) when programming Arduino boards.	CO4-Ana
9.	Explain how industrial automation contributes to the overall efficiency and sustainability of a smart city.	CO5-Ana
10.	In a smart city scenario, describe a practical application of electrical vehicle (EV) charging infrastructure and its benefits.	CO5-Ana

PART – B (5 x 16= 80 Marks)

11.	(a)	Illustrate the primary functional blocks in an IoT system and explain their roles in data collection, processing, and action.	CO1- U	(16)
		Or		
	(b)	Describe the role of communication protocols in the logical design of IOT systems. Compare and contrast the use of MQTT and HTTP in IOT communication.	CO1- U	(16)
12.	(a)	Explain the working principle of a resistive sensor and provide an example of its use in a practical application.	CO2- U	(16)
		Or		
	(b)	Describe how capacitive sensors work, including their basic construction and their sensitivity to changes in capacitance.	CO2- U	(16)
13.	(a)	Explain the fundamental operating principle of a solid-state switch.	CO3- U	(16)
		Or		
	(b)	Discuss the reliability of electrical actuation systems in critical applications like medical devices or aerospace.	CO3- U	(16)
14.	(a)	Draw and explain the pin diagram of Arduinouno board and also explain the function of each pin.	CO4- U	(16)
		Or		
	(b)	Describe the primary components of a typical Raspberry Pi setup for IoT projects.	CO4- U	(16)
15.	(a)	Explain the significance of data analytics and AI in optimizing various aspects of a smart city.	CO5- U	(16)
		Or		
	(b)	Explain the concept of IoT enabled Smart Home environment with neat diagram.	CO5- U	(16)