Reg. No. :

Question Paper Code: U5304

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 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. Name two common communication models used in IoT applications.   CO1- U

2. Compare and contrast the differences between physical and logical designs in   CO1- U
    IoT architecture. Provide two key distinctions

3. What is the fundamental operating principle behind inductive sensors, and   CO2-App
    how does it relate to sensitivity and linearity?

4. In what practical application would you choose a capacitive sensor over a   CO2-App
    resistive sensor? Explain.

5. Explain the fundamental difference between mechanical switches and solid-   CO2-App
    state switches.

6   How does a DC motor differ from an AC motor in terms of power supply and   CO2 -App
    operation?

7   How does a System-on-Chip (SoC) differ from a microcontroller in terms of   CO2-App
    functionality and complexity?

8   Compare and contrast the key differences between Raspberry Pi and Arduino   CO3-Ana
    boards, focusing on their hardware capabilities and use cases.

9   Compare and contrast the differences between industrial automation and   CO4-Ana
    smart traffic control applications in a smart city in terms of their objectives
    and technologies involved.

10 Evaluate the potential challenges and benefits of implementing a smart grid   CO5-Ana
    system in a densely populated urban area within a smart city context.

11.	(a)	Explain the logical design of IOT in detail.	CO1- U	(16)
		Or		
	(b)	Explain the physical design of IOT in detail.	CO1 -U	(16)
12.	(a)	Explain the working principle of a resistive sensor and provide an example of its use in a practical application.	CO1- U	(16)
		Or		
	(b)	Describe how capacitive sensors work, including their basic construction and their sensitivity to changes in capacitance.	CO1- U	(16)
13.	(a)	Draw and explain various types of Electrical Actuation Systems.	CO1-U	(16)
		Or		
	(b)	Sketch the Solid-state switches sensor and explain its operation	CO1- U	(16)
14.	(a)	Describe the primary components of a typical Raspberry Pi setup for IoT projects.	CO3- Ana	(16)
		Or		
	(b)	Discuss the process of customizing a SoC for specific application requirements.	CO3- Ana	(16)
15.	(a)	Describe initiatives to reduce environmental impact and promote sustainability through IoT-enabled industrial automation.	CO5- U	(16)
		Or		
	(b)	Provide real-world examples of how IoT-enabled smart lighting can enhance user comfort and productivity in office environments.	CO5- U	(16)

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