Reg. No. :

Question Paper Code: R5304

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Fifth Semester

R21UEE504 – INTERNET OF THINGS FOR ELECTRICAL AUTOMATION

Electrical and Electronics Engineering

(Regulations R2021)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Give a detailed note on the Internet of Things.	CO1- U
2.	List any four characteristics of IoT.	CO1- U
3.	Give the definition of a sensor and explain how it differs from a transducer.	CO1- U
4.	Mention any two key criteria for selecting sensors in practical applications.	CO1- U
5.	Define an actuator and explain its purpose in IoT systems.	CO1- U
6.	Differentiate between sensors and actuators.	CO1- U
7.	Illustrate the significance of Raspberry Pi in IoT applications.	CO1- U
8.	Define an IoT system with one example.	CO1- U
9.	Define a Smart City in the context of IoT.	CO1- U
10.	Mention any two objectives of Smart City design.	CO1- U

PART – B (5 x 16= 80 Marks)

11. (a) Explain the architecture of IoT with a neat block diagram. CO1- U   (16)
    Describe the role of each layer in detail.

                                   Or

    (b) Classify the different IoT communication models. Compare them   CO1- U   (16)
    based on features and provide use-case examples.

12. (a) Apply the principles of inductive sensing to examine their operation in real-world applications, focusing on how sensitivity and linearity influence their performance.   CO2- App   (16)

<div align="center">Or</div>

   (b) Apply the concept of potentiometers to discuss the working and practical use of resistive potentiometers in measurement systems.   CO2- App   (16)

13. (a) Analyze the reliability of electrical actuation systems when used in critical applications such as medical devices or aerospace systems.   CO4- Ana   (16)

<div align="center">Or</div>

   (b) Analyze the fundamental operating principle of a solid-state switch and its behavior in electronic switching applications.   CO4- Ana   (16)

14. (a) Explain the architecture of IoT systems and describe the role of Raspberry Pi in implementing IoT applications.   CO2- U   (16)

<div align="center">Or</div>

   (b) Differentiate between microcontrollers and system-on-chips (SoCs) with suitable examples   CO2- U   (16)

15. (a) Describe how industrial automation contributes to the functioning of a Smart City with suitable examples.   CO1- U   (16)

<div align="center">Or</div>

   (b) Illustrate the concept of a Smart City and describe the major components involved in its design.   CO1- U   (16)

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