Register No.: …………………………..   Name: …………………………………………………………..

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SEVENTH SEMESTER B.TECH DEGREE EXAMINATION (R), DECEMBER 2023
(2020 SCHEME)

Course Code :   20ECT443

Course Name: **IoT and Applications**

Max. Marks :   **100**   **Duration: 3 Hours**

PART A
(Answer All questions. Each question carries 3 marks)

1. List and briefly explain the various IoT enabling technologies.
2. Define the concept of IoT.
3. Briefly explain how M2M communication is carried out.
4. Explain the role of sensors with actuators in IoT.
5. Explain Zigbee protocol.
6. What are the specifications of 6LoWPAN.
7. Explain the significance of Thing Speak in cloud computing.
8. Summarize IoT security requirements.
9. List out the steps to install Linux on a Raspberry Pi.
10. Illustrate the building blocks of IoT.

PART B
(Answer any one full question from each module. Each question carries 14 marks)

MODULE I

11. a) Explain the characteristics of IoT with relevant definitions.   (7)

     b) Illustrate and explain the physical design of IoT.   (7)

OR

12. a) Write notes on various IoT deployment levels.   (7)
     b) Explain the logical design of IoT with suitable illustrations.   (7)

MODULE II

13. a) Compare and contrast M2M with IoT. (7)

    b) Describe in detail about network function virtualization. (7)

OR

14. a) Explain the various building blocks of wireless sensor networks. (7)

    b) Illustrate and explain how smart objects are connected to improve communication. (7)

MODULE III

15. a) Explain the various layers of Zigbee. (7)

    b) Compare IEEE 802.15.4e and IEEE 802.15.4g. (7)

OR

16. a) Explain 6LoWPAN in detail. (7)

    b) Describe the LoRaWAN protocol with suitable illustrations. (7)

MODULE IV

17. a) Explain the MQTT protocol. (7)

    b) Compare SaaS and PaaS cloud service model. (7)

OR

18. a) Describe how privacy is maintained in IoT. (7)

    b) Elaborate edge to cloud communications. (7)

MODULE V

19. a) Describe various IoT physical devices and end points. (7)

    b) Explain the strategies adopted in a smart city project based on a case study. (7)

OR

20. a) Explain an air pollution monitoring system in smart cities. (7)

    b) Write a python code for interfacing Raspberry Pi to I2C devices for controlling GPIO outputs. (7)

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