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

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SIXTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2023

(2020 SCHEME)

Course Code : 20CST386

Course Name: Wireless Networks and IoT Applications

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

PART A

(Answer all questions. Each question carries 3 marks)

1. What are the characteristics of IoT?
2. What is vision of IoT? How does the vision reflect in use of IoT in smart street lighting?
3. List any three the features of Constrained Application Protocol (COAP).
4. Describe the four modes for gathering data.
5. What is a smart sensor? What are the capabilities of a smart sensor?
6. Differentiate between edge computing and distributed computing.
7. List the features which are common in Arduino boards.
8. Describe the use of GPIO pins? Mention the roles of actuators in IoT systems.
9. What does a business model concept represent?
10. Interpret the concept of value creation in IoT.

PART B

(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) Compare various Network topologies used in Wireless Networks. (6)
    b) Explain protocol stacks used in wireless networks for IoT applications. (8)

OR

12. a) Describe the following wireless technologies on
        i) Zigbee
        ii) WiFi
        iii) Thread (7)
    b) Demonstrate the architectural design of 6LoWPAN Protocol stack. (7)

MODULE II

13. a) Define M2M. What are the open protocols, tools and frameworks generally used in M2M. (8)
    b) List the functions of device management with proper explanation. (6)

OR

14. a) Compare SOAP and REST protocols. (7)
    b) Summarize different Online Transactions and Processing techniques. (7)

MODULE III

15. a) Explain about NoSQL with its usage and how does SQL differ from NoSQL? (7)
    b) How does participatory sensing enable traffic congestion reports? Show an architectural diagram of the process. (7)

OR

16. a) How data collection, storage & computing services done using Nimbits? (9)
    b) Explain how actuators and sensors interact with physical world and classify the actuators based on the energy type. (5)

MODULE IV

17. a) Develop an Arduino Program to estimate the room temperature in degree Celsius. (10)
    b) What is an embedded software? (4)

OR

18. a) What do you mean by Arduino sketches and explain with help of an example. (4)
    b) Develop an Arduino program to build an Arduino traffic light controller. (10)

MODULE V

19. a) Explain various tasks of a smart irrigation monitoring service. (8)
    b) How IoT technology helps 'Telemedicine' in India? (6)

OR

20. a) Explain various tasks of a smart home monitoring service. (8)
    b) What are the objects and their uses at cloud platform for forest-fire monitoring services? (6)

****