

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

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**SIXTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2024****(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. Compare Bluetooth and Bluetooth LE (Low Energy) power classes.
3. List any three needs for IoT device management.
4. Explain any three important features of Constrained Application Protocol (COAP).
5. List any two merits of using the cloud in IoT applications.
6. What is a smart sensor? What are the capabilities of a smart sensor?
7. What are the on-board functional units in Intel Galileo?
8. Compare and contrast Raspberry Pi and Arduino.
9. Interpret the concept of value creation in IoT.
10. What does a business model concept represent?

**PART B*****(Answer one full question from each module, each question carries 14 marks)*****MODULE I**

11. a) Explain TCP/IP protocol stack with neat sketch. (8)
- b) Describe the following wireless technologies: (6)
  - i) Zigbee
  - ii) WiFi
  - iii) Thread

**OR**

12. a) Illustrate the architectural design of LoRaWAN. (6)
- b) Explain protocol stacks used in wireless networks for IoT applications. (8)

**MODULE II**

13. a) Explain the use IoT web communication protocols for connected devices. (10)  
b) Compare SOAP and REST protocols. (4)

**OR**

14. a) Define M2M. Explain M2M architecture. Correlate M2M architecture levels with IoT architecture levels. (10)  
b) Identify any four functions of Device-Management Gateway. (4)

**MODULE III**

15. a) Explain about Wireless Sensor Network technology. (8)  
b) Define actuators. Explain the role of actuators in IoT systems. (6)

**OR**

16. a) With the help of a diagram explain the architecture of Nimbits. (9)  
b) What is participatory sensing in IoT? (5)

**MODULE IV**

17. a) Demonstrate an example for Raspberry Pi applications for industrial IoT. (10)  
b) Compare any four features of Arduino-R3 and Arduino Yun boards. (4)

**OR**

18. a) Write an Arduino program to blink an LED. (10)  
b) What is an embedded software? (4)

**MODULE V**

19. a) Explain the role of IoT in smart healthcare monitoring service. (10)  
b) Write note on IBM Bluemix. (4)

**OR**

20. a) What are the objects and their uses at cloud platform for forest-fire monitoring services? (10)  
b) List the tasks of an air-pollution monitoring service. (4)

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