Reg. No

B.Tech DEGREE EXAMINATION, MAY 2024

Seventh Semester

18CSE462J - INTRODUCTION TO IOT

(For the candidates admitted during the academic year 2018-2019 to 2021-2022)

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

ii. **Part - B** and **Part - C** should be answered in answer booklet.

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

PART - A (20 × 1 = 20 Marks)
Answer **all** Questions

		Marks	BL	CO

1. The core element of architecture of smart city is _____   1   1   1
   (A) Mobile Unified Service (B) Urban Application Platform
   (C) Management center (D) Integrated Information Provider

2. What is the full form of IDE in Arduino IDE IoT software?   1   2   1
   (A) Intra Defence Environment (B) Integrated Development Environment
   (C) Intra Development Environment (D) integrated Deployed Environment

3. What is the full form of DHCP in IoT communication protocols?   1   2   1
   (A) Domain Host Communication Protocol (B) Dynamic Host Configuration Protocol
   (C) Dynamic Host Control Protocol (D) Domain Host Control Protocol

4. What is the component of an IoT system that executes a program?   1   2   1
   (A) A digital to analog converter (B) A microcontroller
   (C) An actuator (D) A sensor

5. Which service permits the changes to the IoT services?   1   1   2
   (A) Registered service status (B) Enable from suspension
   (C) Update (D) Enable

6. Which of the following protocol is used to link all the devices in the IoT?   1   2   2
   (A) HTTP (B) UDP
   (C) TCP/IP (D) Network

7. What IoT collects?   1   2   2
   (A) Device data (B) Machine generated data
   (C) Sensor data (D) Human generated data

8. A resource that contains an actual value is called as _____   1   2   3
   (A) Potential variable (B) Measured variable
   (C) Resource variable (D) Physical variable

9. . IoT promotes the creation of IoT terminal industry _____   1   2   3
   (A) Devices (B) Network
   (C) Clusters (D) Thing

10. Which protocol is lightweight?   1   2   3
    (A) MQTT (B) CoAP
    (C) SPI (D) FTP

11. _____ allows us to control electronic components.   1   2   3
    (A) MQTT (B) HTTP
    (C) CoAP API (D) RESTful API

12. Which programming language is used by Arduino IDE IoT software for writing codes?
    (A) Python (B) Java
    (C) C/C++ (D) JavaScript

    1 2 3

13. What are the key components of a M2M system?
    (A) Vortex DDS (B) Smart Homes
    (C) Sensors and Wi-Fi (D) Protocols

    1 2 4

14. The function of a sensor is to _____.
    (A) Detect events within specified environment (B) Separate physical parameters
    (C) Track and transfer data to computer processor (D) Only transfer data to computer processor

    1 2 4

15. Standard ports of MQTT are _____
    (A) I2C (B) SSL
    (C) USART (D) TCP/IP

    1 2 4

16. MQTT is mainly used for _____
    (A) M2M communication (B) Device communication
    (C) Internet communication (D) Wireless communication

    1 1 4

17. Sensors provide _____ data per second.
    (A) Tens of Hundreds of data (B) Hundreds of thousands of data
    (C) Tens of thousands of data (D) Hundreds of Hundreds of data

    1 1 5

18. Gateway provides the connection between _____ and _____
    (A) Cloud and controller (B) Network and Cloud
    (C) Network and Controller (D) Controller and device

    1 1 5

19. Digital acquisition systems are used when _____
    (A) bandwidth is zero (B) bandwidth is low
    (C) bandwidth is medium (D) bandwidth is high

    1 1 5

20. Most frequency used mathematical model of a time series is:
    (A) Additive model (B) Mixed model
    (C) Multiplicative model (D) Regression mode

    1 1 6

PART - B (5 × 4 = 20 Marks)
Answer any 5 Questions

	Marks	BL	CO
21. Explain sample Use cases of IoT in industry domains	4	2	1
22. Discuss the component of IoT reference architectures	4	2	2
23. Give detail insight about industrial data acquisition systems	4	2	3
24. Explain the following terms : a. MQTT message broker b. Web sockets	4	2	4
25. Discuss the role of the Industrial Control System (ICS) in IIOT-based applications	4	2	4
26. Discuss the Zigbee architecture layers in ZigBee technology	4	2	5
27. Give short notes on Data summarization	4	1	5

PART - C (5 × 12 = 60 Marks)
Answer all Questions

Marks BL CO

28. (a) Discuss in detail about sample IoT use case and its applications and also list out advantages of IoT based on industrial application.   12   1   1

(OR)

(b) Explain different architecture Layers components present in the IoT.

29. (a) Explain about the various parts of the Internet of Things reference architecture and how they connect to real-world applications in the business world   12   1   2

(OR)

(b) Clarify the following concepts and explain the functionality in IIoT or IoT settings:
   i.   IoT Gateway
   ii.   Data Streaming
   iii. Edge computing
   iv.   Fault detection in IoT

30. (a) Describe the following terms: 12   1   3
   i.   Analog sensor
   ii.   Digital sensor
   iii. Classification of Sensor
   iv.   Simple Transducer system

(OR)

(b) Analysis of role of Data injection and Data processing pipeline in IoT-based application.

31. (a) Illustrate the following proximity technology and list out difference between these technologies.   12   1   5
   i.   Bluetooth
   ii.   Zigbee
   iii. Serial Communication

(OR)

(b) Illustrate the following web service components used in communication with cloud applications
   SOAP, UDDI, WSDL, Role of REST service

32. (a) Discuss about time series data and its four characteristics used in data analytics   12   1   6

(OR)

(b) Illustrate the following terms:
   i) Data summarization and Data sketching
   ii) Working principle of Bluetooth technology (piconets)

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