Reg. No.															

B.Tech/ M.Tech (Integrated) DEGREE EXAMINATION, MAY 2024
Fourth Semester

21CSE253T - INTERNET OF THINGS
(For the candidates admitted from the academic year 2022-2023 onwards)

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: 75

PART – A (20 × 1 = 20Marks) Marks BL CO PO
Answer **ALL** Questions

1. Who initiates uplink messages? 1 1 1 1
   (A) Network server (B) End devices
   (C) Application server (D) Join server

2. The join sever processes _____. 1 1 1 1
   (A) Join-request messages (B) MAC commands
   (C) Application - specific data messages (D) Wi-Fi process

3. The wireless communication protocol that is ideal for low-power and short-range communication between IoT devices is called as_____. 1 2 1 1
   (A) Zigbee (B) Wi-Fi
   (C) Bluetooth (D) 3G

4. Which layer of the IoT architecture updates mechanisms to protect data and devices? 1 2 1 1
   (A) Business layer (B) Security and Privacy layer
   (C) End-user layer (D) Regulatory and Compliance layer

5. Identify the MAC protocol that divides the communication channel into time slots, with each device allocated specific time intervals for transmission. 1 1 2 2
   (A) CSMA/CA (B) TDMA
   (C) FDMA (D) Aloha

6. "Devices are interconnected, creating a redundant network with multiple communication paths". Identify the topology that suits the above statement. 1 2 2 2
   (A) Star (B) Bus
   (C) Mesh (D) Random

7. The IoT devices with restricted communication capabilities is often called as _____. 1 1 2 2
   (A) Constrained nodes (B) Constrained networks
   (C) Constant nodes (D) Covering nodes

8. Pick the Publish-Subscribe messaging protocol. 1 1 2 2
   (A) CoAP (B) MQTT
   (C) IPv4 (D) IPv6

9. In an IoT platform, which of the following specification defines the attributes of objects and relationships between objects? 1 2 3 1

(A) Purpose model (B) Process model
(C) Domain model (D) Information model

10. Which among the following components is not a building block of IoT? 1 2 3 1

(A) Applications (B) Gateways
(C) Processors (D) GPU

11. A credit card sized computer that runs on Raspbian OS is called as _____. 1 1 3 1

(A) Arduino (B) Bread board
(C) Raspberry PI (D) Mother board

12. Select the 16/32 bit RISC low power, high performance micro-processor. 1 1 3 1

(A) System-on-chip (B) FPGA
(C) SATA (D) ASIC

13. Which programming language is used for managing structured data? 1 1 4 2

(A) SQL (B) Python
(C) Basic (D) Fortran

14. Identify a commercial PaaS for the IoT /M2M platform. 1 1 4 2

(A) SQL (B) Xively
(C) MQTT (D) IPv4

15. Select the data modelling language that is used for operations based on network configuration management protocols. 1 2 4 6

(A) AWS (B) Yang
(C) Django (D) SQL

16. Which of the following is an open-source distributed event streaming platform? 1 1 4 6

(A) Apache Kafka (B) MQTT
(C) CoAP (D) Yang

17. "It is a blueprint that helps you design and deploy the industrial network infrastructure you need". Identify the entity. 1 2 5 4

(A) Cisco IoT system (B) Data warehouse
(C) Data mining (D) Converged Plant Wide Ethernet (CPWE)

18. In which environment does the global sensor network work on? 1 2 5 4

(A) C++ (B) Java
(C) HTML (D) C

19. The community that is working together to establish an IoT architecture is _____. 1 1 5 4

(A) Bot 2 bot (B) Intercloud
(C) Red hat (D) Eclipse IoT

20. Which one of the following protocols is lightweight? 1 2 5 4

(A) IP (B) HTTP
(C) MQTT (D) CoAP

PART – B (5 × 8 = 40 Marks)

Answer **ALL** Questions

		Marks	BL	CO	PO
21. a.	Explain the one M2M IoT architecture with appropriate diagram.	8	2	1	6
	(OR)				
b.	Discuss on edge computing. Explain its advantages while contributing for IoT. Explain with an example.	8	2	1	6
22. a.	Analyze the features of the application layer protocols such as MQTT and CoAP.	8	4	2	2
	(OR)				
b.	Compare and contrast the IPv4 and IPv6 header.	8	4	2	2
23. a.	Illustrate the building blocks of the IoT system.	8	2	3	1
	(OR)				
b.	Demonstrate the features and design flow approaches in system on chip.	8	2	3	1
24. a.	Explain the concept of Xively. Describe how it helps in building IoT applications. Further elaborate its significance in device management and real-time data streaming.	8	2	4	2
	(OR)				
b.	Discuss the following:		2	4	2
	(i) Structural Vs unstructural data	3			
	(ii) Data in motion Vs Data in rest	3			
	(iii) No SQL database	2			
25. a.	Explain the significance in deploying a resislie Converged Plant Wide Ethernet (CPWE) architecture in IoT.	8	2	5	4
	(OR)				
b.	Explain in Grid blocks reference model. Describe its utilization in view of implementing smart and connected cities.	8	2	5	4

PART – C (1 × 15 = 15 Marks)

Answer **ANY ONE** Question

		Marks	BL	CO	PO
26.	Naman, a business owner wants to implement an IoT ecosystem for her retail store to enhance customer experience and optimize operations. Identify and explain the key functional blocks of an IoT ecosystem that Naman should consider integrating into his retail store.	15	4	1	6
27.	Sarah is a network administrator responsible for managing an Industrial IoT (IIoT) environment within a manufacturing facility. She wants to implement a protocol to facilitate communication between sensors, actuators and control systems in the facility. Her aim is to implement a publish subscribe messaging protocol that is designed for scenarios where devices need to efficiently exchange messages in a lightweight and asynchronous manner. Identify a suitable protocol that Sarah needs to implement and then elaborate its significance in IoT environment.	15	4	2	2

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