BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – B.Tech.(CSE)-AIML-2023
Course Name – Internet of Things
Course Code - ESCM301
(Semester III)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Identify the component of an IoT system responsible for collecting data from the physical environment:

a) Actuators b) Sensors
c) Gateways d) User Interface

(ii) Define the role of an IoT gateway in an IoT system:

a) To store and analyze data b) To collect data from the environment
c) To bridge communication between IoT devices and cloud servers d) To provide a user interface for device control

(iii) Select the IoT component responsible for storing and managing the vast amounts of data generated by devices:

a) Sensors b) Connectivity
c) Data Management d) User Interface

(iv) Select the frequency band for Bluetooth operation.

a) 5 GHz b) 2.4 GHz
c) 915 MHz d) 868 MHz

(v) Identify the main characteristic of Bluetooth Low Energy (BLE).

a) High power consumption b) Low power consumption
c) Continuous data streaming d) High data rate

(vi) Identify the role of the Zigbee Coordinator (ZC) in a network.

a) Relaying data b) Extending network range
c) Managing the network d) Connecting end devices directly

(vii) Predict name of IoT technology that enables real-time control and monitoring of critical infrastructure systems.

a) Big Data Analytics b) Wireless Sensor Networks
c) SCADA d) Embedded Systems

(viii) Select the enabling technology that allows devices to communicate directly without human intervention in IoT systems.

a) M2M

b) RFID

c) SCADA

d) Embedded Systems

(ix) Trace the IoT technology that processes large volumes of data to derive meaningful insights.

a) RFID

b) Cloud Computing

c) Big Data Analytics

d) Wireless Sensor Networks

(x) Identify the main goal of the Web of Things (WoT).

a) To connect IoT devices to specialized proprietary protocols

b) To create a universal cloud platform for IoT devices

c) To integrate IoT devices into the web using standard web technologies

d) To replace the Internet of Things completely

(xi) Identify the protocol commonly used in the Web of Things.

a) CoAP

b) HTTP

c) Zigbee

d) LoRa

(xii) Select the technology that Web of Things heavily relies on for data exchange.

a) SQL databases

b) RESTful APIs

c) Blockchain

d) GraphQL

(xiii) Identify the primary purpose of clustering in IoT networks.

a) Improve device security

b) Optimize routing and data transmission

c) Reduce device costs

d) Increase battery life

(xiv) Definition of a Cluster Head (CH) in an IoT network is

a) A device that powers all nodes

b) A central device that manages communication within a cluster

c) A sensor that collects environmental data

d) A device that handles security protocols

(xv) Identify the major benefit of clustering in IoT routing.

a) Increased data redundancy

b) Simplified data aggregation

c) Reduced power consumption

d) Higher communication overhead

Group-B
(Short Answer Type Questions)
3 x 5=15

2. Discuss the role of energy efficiency in clustering-based routing protocols. (3)
3. Discuss the advantages and limitations of using Wi-Fi as a communication protocol in IoT applications. (3)
4. Compare different WSN Network Topologies. (3)
5. Describe the different components present in an IoT system (3)
6. Classify the types of smart retailing technologies available today. (3)

OR

Explain the role of IoT in smart fleet management. (3)

Group-C
(Long Answer Type Questions)
5 x 6=30

7. Describe the process of implementing green energy solutions in building infrastructure. (5)
8. Compare the impact of smart farming technologies on crop yield versus traditional farming methods. (5)
9. Explain the different types of IoT security measures used to protect IoT devices (5)
10. Describe about M2M communication (5)
11. Explain SCADA System (5)
12. Summarise the use of clustering in smart grid applications for IoT. (5)

OR

Summarise the use of clustering in environmental monitoring IoT systems. (5)

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