BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – MCA-2022/MCA-2023
Course Name – Internet of Things and Data Analytics
Course Code - MCA402A
(Semester IV)

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)   What does IoT stand for?
    a) Internet of Text   b) Internet of Technology
    c) Internet of Things   d) Internet of Trends

(ii) Identify, which of the following is a key characteristic of IoT devices?
    a) Limited connectivity   b) Centralized control
    c) Autonomous operation   d) . Incompatibility with other devices

(iii) Predict the core objective of IoT in practical terms.
    a) To connect people through social media   b) To connect devices and enable them to communicate
    c) To create virtual reality environments   d) To replace traditional manufacturing processes

(iv) Identify the communication protocol that is commonly used in IoT devices for short-range communication.
    a) Bluetooth   b) Wi-Fi
    c) Ethernet   d) 4G LTE

(v)   Predict, which industry is primarily associated with Industrial Internet of Things (IIoT)?
    a) Entertainment   b) Healthcare
    c) Manufacturing   d) Agriculture

(vi) Identify the role of applications play in the Application Layer of an IoT ecosystem.
    a) Processing data locally   b) Managing device configurations
    c) Providing software interfaces for end-users   d) Establishing device connectivity

(vii) Which technology driver is commonly used for device-to-device communication and known for its short-range, low-power connectivity?
    a) Zigbee   b) 5G
    c) RFID   d) LoRaWAN

(viii) Infer, which technology driver is a wireless communication protocol designed for short-range communication between devices, commonly used in home automation and IoT applications?

a) 4G LTE
b) Wi-Fi
c) Bluetooth
d) Zigbee

(ix) What technology driver is commonly used for passive identification and tracking of objects using radio frequency signals?

a) NFC
b) RFID
c) Bluetooth
d) Zigbee

(x) Illustrate the key driver behind the rapid adoption of IoT in various industries.

a) Cost Reduction
b) Regulatory Compliance
c) Legacy System Compatibility
d) Isolation of Data

(xi) Choose the primary function of the OCF Secure IP Device Framework.

a) Device manufacturing
b) Providing a versatile communications layer with security
c) Cloud storage
d) Protocol translation

(xii) Discover the steps involved in the OCF interaction model for accessing resources.

a) INSERT, GET, MODIFY, DELETE, NOTIFY
b) SAVE, VIEW, MODIFY, REMOVE, NOTIFY
c) ADD, FETCH, CHANGE, ERASE, NOTIFY
d) CREATE, RETRIEVE, UPDATE, DELETE, NOTIFY

(xiii) Select the appropriate goal of the Open Interconnect Consortium (OIC) regarding IoT device connectivity.

a) Fastest data transmission
b) Secure and reliable discovery
c) Closed ecosystem integration
d) Limited device compatibility

(xiv) Choose the correct protocol does the OIC Core Framework emphasize for device discovery.

a) IETF CoRE
b) HTTP
c) FTP
d) SSH

(xv) Discover the correct aim of the IoTivity framework in achieving IoT applications.

a) Proprietary protocols support
b) Secure cloud storage
c) Seamless device-to-device connectivity
d) Hardware compatibility

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

2. How did UPS utilize M2M technology to improve its operations? (3)
3. Explain the relationship between OMA enablers and the ETSI M2M framework. (3)
4. Explain about EIPs and and its functionalities do they offer besides consolidated views of company information. (3)
5. What does IoT stand for, and what does it refer to? (3)
6. Why is the distinction between IoT and WoT important, despite inevitable overlaps? (3)

OR

How does OPC Unified Architecture (UA) differ from earlier versions of OPC? (3)

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

7. List various types of sensors commonly used in IoT applications and describe their functionalities. (5)
8. Summarize the impact of IoT on improving operational efficiency in businesses. (5)
9. Explain the solutions to overcome the challenges faced in standardizing IoT, considering their impact on industry practices, interoperability, security, and innovation. (5)

10. Discuss the historical context and technological advancements that have led to the emergence of the Internet of Things (IoT) as the third wave of the information and communications technology (ICT) industry. (5)

11. List out the technical requirements and challenges involved in achieving cost-effective integration of IoT devices. (5)

12. Provide a detailed comparison between polynomial regression and linear regression, discussing the advantages and limitations of each approach. (5)

OR

Analyze the advantages and limitations of unsupervised learning in discovering hidden patterns and structures in data compared to supervised learning, which focuses on predictive modeling and inference. (5)

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