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BRAINWARE UNIVERSITY

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Brainware University
398, Ramkrishnapur Road, Barasat
Kolkata, West Bengal-700125

Term End Examination 2025-2026
Programme – Dip.CSE-2022/Dip.CSE-2023
Course Name – Internet of Things
Course Code - DCSE-PC501
(Semester V)

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) Select primary function of the IoT communication block.

a) Collecting data from sensors
b) Handling communication for the IoT system
c) Providing an interface for user control
d) Securing the IoT system

(ii) Identify from the following that is NOT part of the physical design of IoT.

a) Devices for remote sensing
b) Memory and storage interfaces
c) Application layer protocols
d) Wired and wireless connections

(iii) Select the meaning of 'edge computing' in the context of IoT.

a) Storing data on the cloud
b) Processing data closer to where it is generated
c) Using AI algorithms on IoT devices
d) Managing IoT devices remotely

(iv) Select the operating frequency band of Zigbee.

a) 2.4 GHz
b) 5 GHz
c) 900 MHz
d) 3.5 GHz

(v) The MQTT protocol is best described as:

a) A transport layer protocol
b) A messaging protocol based on a publish/subscribe model
c) An encryption protocol
d) A network layer protocol

(vi) State the purpose of implementing device attestation in IoT security.

a) To eliminate all vulnerabilities
b) To ensure that only authenticated and authorized devices connect to the network
c) To facilitate device discovery
d) To ignore potential risks

(vii) Choose the key feature of WoT middleware.

a) It manages device-to-device interactions.
b) It provides an interface for data processing.
c) It enables cloud storage for devices.
d) It abstracts data formats for applications.

(viii) Choose the WoT architecture that handles data storage and processing.

a) Data layer.
b) Service layer.

c) Network layer. d) Application layer.

(ix) Choose from the following that best describes WoT's approach to device connectivity.

a) It relies on web-based services. b) It uses unique identification for each device.

c) It is limited to local networks. d) It involves only physical hardware.

(x) Choose from the following that is used as a standard in WoT.

a) W3C WoT. b) OneM2M.

c) IETF CoRE. d) OPC UA.

(xi) Identify the benefit of using IoT in manufacturing.

a) Reduced production costs. b) Increased product customization.

c) Faster production cycles. d) Better resource allocation.

(xii) Select from the following that best defines Brownfield IoT.

a) Adding IoT to an existing system. b) Adding new IoT systems to an industry.

c) Building a new IoT-enabled facility. d) Using IoT in new construction projects.

(xiii) State the key feature of Hydra middleware.

a) Only Bluetooth support b) Only HTTP support

c) Only FTP support d) Multi-protocol support

(xiv) State the usability of Hydra middleware.

a) Creating mobile apps b) Interoperability between different IoT devices

c) Hardware design d) Data encryption

(xv) State the purpose of IoT middleware.

a) Device power b) Graphics

c) Data communication, integration, and processing d) User authentication only

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Group-B

(Short Answer Type Questions) 3 x 5=15

2. State the implications of IoT trends have for industries such as healthcare and manufacturing. (3)
3. Describe the importance of IoT in various industries and everyday life. (3)
4. Describe the layered architecture of the IoTivity stack and its key components. (3)
5. Illustrate the challenges faced in IoT standardization and their effects on system integration and interoperability. (3)
6. Compare WoT Portals with traditional web portals in terms of functionality and purpose. (3)

OR

Distinguish the role of business intelligence in WoT from its role in conventional IT systems. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Define the Internet of Things (IoT) and its significance in modern technology. (5)
8. Illustrate challenges are addressed by the use of middleware platforms in IoT systems like IoTivity. (5)
9. Describe the layered architecture of the IoTivity stack. Explain how each layer contributes to the functioning of an IoT system. (5)
10. Compare the integration challenges faced by Brownfield IoT versus Greenfield IoT in industries. (5)
11. Analyze the interplay between Cloud Computing and IoT in modern applications. (5)
12. Estimate the challenges involved in integrating IoT with existing industrial systems, such as Brownfield IoT. (5)

OR

Evaluate the role of Smart Objects in improving the automation processes of industrial applications. (5)

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