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BCA-403(G1)

BCA (Fourth Semester) EXAMINATION, 2024-25

FUNDAMENTAL OF IOT

Time : 2½ Hours

Maximum Marks : 60

Note : Attempt all questions.

Section—A

1. Multiple choice type questions. 1 each
 - (a) Which of the following is NOT a component of an IoT system ? (CO2, BL-2)
 - (i) Sensors
 - (ii) Actuators
 - (iii) Cloud Computing
 - (iv) Compiler

P. T. O.

(b) What is the primary purpose of a digital twin in IoT ? (CO1, BL-3)

- (i) To create a backup of IoT data
- (ii) To simulate a physical object for monitoring and analysis
- (iii) To enhance cybersecurity measures
- (iv) To increase data storage capacity

(c) In IoT, what is the primary role of sensors ?

(CO2, BL-3)

- (i) Store data
- (ii) Process data
- (ii) Collect data from the environment
- (iv) Display information

(d) Which security vulnerability is MOST common in IoT devices ? (CO1, BL-2)

- (i) Cross-site scripting (XSS)
- (ii) SQL Injection
- (iii) Weak or default passwords
- (iv) Man-in-the-middle attack

(e) In IPv6, how many bits are used for addressing devices in IoT networks ?

(CO2, BL-3)

- (i) 32 bits
- (ii) 64 bits
- (iii) 128 bits
- (iv) 256 bits

(f) Which communication protocol is commonly used in IoT ?

(CO2, BL-2)

- (i) HTTP
- (ii) MQTT
- (iii) FTP
- (iv) SMTP

(g) Which layer of the IoT architecture handles data transmission ?

(CO1, BL-2)

- (i) Perception Layer
- (ii) Network Layer
- (iii) Application Layer
- (iv) Processing Layer

(h) Which technology enables IoT devices to communicate without human intervention ?

(CO2, BL-3)

- (i) Machine Learning
- (ii) M2M Communication
- (iii) Artificial Intelligence
- (iv) Data Mining

(i) Which encryption protocol is considered most secure for IoT device communication ?

(CO2, BL-3)

- (i) AES-128
- (ii) RSA-2048
- (iii) SSLv3
- (iv) DES

(j) What is the main advantage of using IoT in agriculture ?

(CO4, BL-3)

- (i) Improved marketing strategies
- (ii) Better supply chain management
- (iii) Precision farming through real-time data
- (iv) Enhanced social media presence

(k) Identify the data visualization tools ?

(CO5, BL-3)

(i) SPSS

(ii) Orange

(iii) Power BI

(iv) All of the above

(l) Cloud Service(s) is/are

(CO5, BL-3)

(i) SaaS

(ii) XaaS

(iii) Both (i) and (ii)

(iv) Only (i)

2. Attempt any four of the following. short answer type questions) : 3 each

(a) What is the function of an actuator in an IoT system ? (CO2, BL-2)

(b) Explain IoT design principles and needed capabilities. (CO1, BL-3)

(c) Explain different types of network devices with suitable diagram. (CO2, BL-4)

- (d) How does the Functional View of IoT architecture support real-time data processing, automation, and decision-making in industrial IoT ? (CO3, BL-5)
- (e) Describe need of knowledge management ? (CO4, BL-3)

Section—B

3. Attempt any *two* of the following. 6 each
- (a) Explain the concept of the Internet of Things (IoT) and its significance in modern technology. (CO2, BL-3)
- (b) Discuss the security and privacy challenges associated with remote control in IoT systems. What measures can be implemented to ensure secure device interaction and prevent unauthorized access ? (CO4, BL-5)
- (c) Discuss the advantages and challenges of integrating IoT with cloud services with diagram. (CO5, BL-3)
4. Attempt any *two* of the following. 6 each
- (a) What is the difference between sensors and actuators in an IoT system ? Provide *one* example of each. (CO2, BL-3)

- (b) Explain the role of edge computing in IoT and how it reduces latency in data processing.

(CO5 BL-4)

- (c) How do different layers, such as the perception layer, network layer, and application layer, interact to facilitate real-time control and data exchange ? (CO3, BL-5)

5. Attempt any *two* of the following. 6 each

- (a) Explain the importance of real-time data processing in IoT applications ? Give an example. (CO5, BL-3)

- (b) Explain the significance of interoperability in IoT systems and why it is essential for device communication. (CO4, BL-4)

- (c) Describe a digital twin in IoT, and how does it help in real-time monitoring ? (CO5, BL-5)

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