UTTARANCHAL UNIVERSITY, DEHRADUN
UTTARANCHAL SCHOOL OF COMPUTING SCIENCES
MID TERM EXAMINATION
EVEN SEMESTER 2024-25

16

BCA | 4TH SEMESTER
FUNDAMENTALS OF IoT | BCA – 403(G1)

Time: **1:15 Hour** Max. Marks: **30**

Note: All questions are compulsory.

Q.1- Answer the following questions. (1 x 6 = 6 Marks)

Multiple Choice Questions

a) What is the primary purpose of edge layer in IoT? (CO-3, BL-2)

a. Sending raw data directly to the cloud
b. Processing data closer to the source
c. Managing storage devices
d. Encrypting data

b) Which communication protocol is commonly used for low-power short range communication between IoT devices? (CO-2, BL-2)

a. Bluetooth
b. Wi-Fi
c. LTE
d. None of these

c) Which layer in the IoT Reference Model is responsible for data collection from sensors? (CO-3, BL-2)

a. Network Layer
b. Perception Layer
c. Data Processing Layer
d. Application Layer

State True/ False

d) IoT networks should have low latency for real-time applications like smart healthcare and autonomous vehicles. (CO-1, BL-2)

e) M2M enable IoT devices to exchange data without human intervention. (CO-2, BL-2)

f) The IoT reference model provides a standardized framework to design and develop IoT systems. (CO-3, BL-2)

Q.2-Write short note on any two (up to 70 words) (2 x 3 = 6 Marks)

a) What is the role of the perception layer in the IoT Reference Model, and why is it important? (CO-3, BL-4)

b) How does knowledge management in IoT-driven business processes improve decision-making and operational efficiency? (CO-2, BL-4)

c) Evaluate the role of cloud computing in IoT architecture. How does it affect data management and system performance? (CO-1, BL-5)

Q.3-Attempt any one of the following **(1 x 6 = 6 Marks)**

a) Explain the key design principles of IoT systems. How do scalability, interoperability, and security impact IoT system performance? (CO-1, BL-2)

OR

b) Explain the role of IoT gateways in an IoT system. How do they enable communication between devices, cloud platforms, and legacy systems while ensuring security and efficiency? (CO-2, BL-4)

Q.4- Attempt any one of the following. **(1 x 6 = 6 Marks)**

a) Evaluate the differences between Machine-to-Machine (M2M) communication and IoT-based Everything-as-a-Service (XaaS). How does IoT XaaS improve scalability and flexibility in industrial applications? (CO- 2, BL-5)

OR

b) Compare the IoT Reference Model with the traditional network architecture model (e.g., OSI or TCP/IP). What are the key differences, and why is a specialized model needed for IoT? (CO- 3, BL-5)

Q.5- Attempt any one of the following. **(1 x 6 = 6 Marks)**

a) Evaluate the importance of standard considerations in IoT, such as communication protocols, security measures, and data compliance. How do these standards ensure seamless IoT deployment? (CO- 1, BL-5)

OR

b) Analyze the different layers of the IoT Reference Model. How do these layers interact to ensure seamless data flow, processing, and decision-making in an IoT system? (CO- 3, BL-4)