

19EC621 – IOT AND WIRELESS SENSOR NETWORKS

QUESTION BANK

UNIT 1 OVERVIEW OF INTERNET OF THINGS

2 MARKS:

1. What is the Internet of Things (IoT)?
Ans: IoT is a network of interconnected devices that communicate and exchange data via the internet without human intervention.
2. What are the key components of an IoT system?
Ans: Sensors, connectivity, data processing, and user interface.
3. What are the three layers of the IoT architecture?
Ans: Perception Layer, Network Layer, and Application Layer.
4. What is the role of the Network Layer in IoT architecture?
Ans: It enables communication between IoT devices and cloud servers via wired or wireless networks.
5. Name two wireless communication technologies used in IoT.
Ans: Wi-Fi, Bluetooth Low Energy (BLE).
6. What is the role of cloud computing in IoT?
Ans: It provides storage, processing, and real-time analytics for IoT-generated data.
7. Give two sources of IoT data.
Ans: Environmental sensors and wearable devices.
8. How do smart sensors contribute to IoT?
Ans: They collect, process, and transmit real-time data for IoT applications.
9. What is M2M communication?
Ans: Machine-to-Machine (M2M) communication enables direct exchange of data between devices without human intervention.
10. Name two communication technologies used in M2M.
Ans: LoRaWAN and NB-IoT.
11. Give two real-world applications of IoT.
Ans: Smart homes and industrial automation.

12. How does IoT improve healthcare?

Ans: By enabling remote patient monitoring and real-time health tracking.

13. What modification is made to the OSI model for IoT?

Ans: It includes additional layers for perception and application-specific optimizations.

14. Why is the traditional OSI model insufficient for IoT?

Ans: IoT devices have limited power, computing resources, and require lightweight protocols.

15. What is data enrichment in IoT?

Ans: Enhancing raw IoT data with additional information to improve decision-making.

17. What is the role of an IoT gateway?

Ans: It consolidates data from multiple devices, performs preprocessing, and manages device connections.

18. Name two web communication protocols used in IoT.

Ans: HTTP and WebSockets

19. Why is WebSockets preferred over HTTP for IoT communication?

Ans: WebSockets provide real-time, bidirectional communication with lower latency.

19. What is MQTT used for in IoT?

Ans: It is a lightweight messaging protocol for efficient IoT communication over unreliable networks.

20. How does CoAP differ from HTTP in IoT applications?

Ans: CoAP is optimized for constrained devices and uses UDP instead of TCP, reducing overhead.

BIG QUESTIONS:

1. Explain the Internet of Things (IoT) with its definition, characteristics, and key applications.
2. Describe the key components of an IoT system and explain their roles in enabling smart applications.
3. Explain the three-layer architecture of IoT (Perception, Network, and Application layers) with examples.
4. Discuss the different IoT architectural models, including the four-layer and five-layer architectures.

5. What are the different wireless and wired communication technologies used in IoT? Explain their advantages and applications.
6. Discuss the role of cloud computing, edge computing, and fog computing in IoT systems.
7. What are the primary sources of data in IoT systems? Explain with examples from different domains.
8. Define Machine-to-Machine (M2M) communication and explain its role in IoT with real-world examples.
9. Describe five real-world applications of IoT, explaining how IoT technology enhances efficiency and automation.
10. Explain the modified OSI model for IoT and M2M communication. How is it different from the traditional OSI model?
11. What is data enrichment in IoT? Explain how it enhances IoT data processing and decision-making.
12. Describe the functions of an IoT gateway in data consolidation and device management with examples.
13. Compare different web communication protocols (HTTP, WebSockets, MQTT) used in IoT applications.
14. Explain and compare different IoT message communication protocols (CoAP-SMS, CoAP-MQ, MQTT, XMPP) and their suitability for different IoT applications.