Unit 1:

Q.1 What is the advantage of IOT?

1. Security

2. Privacy

3. **Enhanced data collection**

4. Complexity

Q.2 What is the disadvantage of IOT?

1. Reduced waste

2**. Privacy**

3. Enhanced data collection

4. Technology Optimization

Q3. Identify different names of IoT from following list

1. Internet of Everything
2. M2M
3. Industry 4.0
4. **All of Above**

Q4. Actuators: – They are mainly output components

1. **True**
2. False

Q5. . A “thing” still looks much like an ------- system

1. **embedded**
2. mechanical
3. chemical
4. none of above

Q6. Sensors: – They are mainly input components

1. **True**
2. False

Q7. Internet of Things Enablers

1. Energy
2. Intelligence
3. Communication
4. Integration
5. Interoperability
6. Standards
7. **All of Above**

Q8. Internet of Things sensors

1. Temperature sensor
2. Humidity sensor
3. Proximity sensor
4. Pressure sensor

5. **All of the above**

Q9. Which application doesn't need of IOT

1. Building and Home automation
2. Media
3. **Calculator**
4. Energy management
5. Transportation

Q10. What are the building blocks of IOT?

1. Connectivity
2. Gateways
3. End devices
4. Cloud Applications
5. **All of the above**

Unit 2:

What is the main purpose of MQTT in IoT?

- a) High-bandwidth data streaming
- b) Efficient, low-bandwidth communication
- c) Security management
- d) Device authentication
  Answer: b) Efficient, low-bandwidth communication

Which MQTT message type is used to send a message to a broker?

- a) CONNECT
- b) PUBLISH
- c) SUBSCRIBE

- d) PINGREQ
  Answer: b) PUBLISH

What does QoS 2 in MQTT ensure?

- a) At most once delivery
- b) At least once delivery
- c) Exactly once delivery
- d) No delivery
  Answer: c) Exactly once delivery

In CoAP, which message type requires an acknowledgment (ACK)?

- a) Confirmable (CON)
- b) Non-confirmable (NON)
- c) Reset (RST)
- d) GET
  Answer: a) Confirmable (CON)

Which IPv6 address type is used for communication between a single sender and a group of receivers?

- a) Unicast
- b) Multicast
- c) Anycast
- d) Broadcast
  Answer: b) Multicast

What is the primary function of 6LoWPAN in IoT?

- a) Allow devices to use HTTP over wireless networks
- b) Enable IPv6 communication over low-power, wireless networks
- c) Encrypt data for secure transmission
- d) Manage routing tables for IoT devices
  Answer: b) Enable IPv6 communication over low-power, wireless networks

Which IoT communication protocol is designed for low-power, long-range communication and is commonly used in remote monitoring?

- a) Bluetooth
- b) LoRaWAN
- c) MQTT
- d) CoAP
  Answer: b) LoRaWAN

What is the main difference between Zigbee and Bluetooth in terms of network topology?

- a) Zigbee supports mesh networking, Bluetooth supports point-to-point
- b) Zigbee is designed for audio streaming, Bluetooth is for smart home devices
- c) Zigbee has a higher data rate, Bluetooth consumes less power
- d) Zigbee uses higher power, Bluetooth operates in low-power mode
  Answer: a) Zigbee supports mesh networking, Bluetooth supports point-to-point

Unit 3:

1. Which of the following is an application of M2M in real-time development?

- a) Smart Metering
- b) Video Streaming
- c) Social Media Integration
- d) Game Development
  Answer: a) Smart Metering

2. What does MQTT stand for in the context of M2M protocols?

- a) Message Queue Testing Tool
- b) Message Query Telemetry Transport
- c) Message Queuing Telemetry Transport
- d) Machine Query Telemetry Tool
  Answer: c) Message Queuing Telemetry Transport

3. Which of the following is NOT a challenge in converting M2M protocols to IoT?

- a) Integration Complexity
- b) Data Management
- c) Higher Processing Speed
- d) Security Concerns
  Answer: c) Higher Processing Speed

4. What role does enhanced connectivity play in M2M to IoT conversion?

- a) Allows devices to communicate with each other using limited proprietary protocols
- b) Facilitates seamless integration into IoT ecosystems using multiple connectivity options
- c) Limits devices to a single communication method
- d) Reduces the data collection ability of devices
  Answer: b) Facilitates seamless integration into IoT ecosystems using multiple connectivity options

5. In M2M architecture, what is the function of the Communication Gateway?

- a) To gather data from sensors
- b) To provide real-time data analysis
- c) To connect devices to the network and handle communication protocols

- d) To store all collected data locally
  Answer: c) To connect devices to the network and handle communication protocols

6. Which of the following is NOT a benefit of having an M2M communication framework?

- a) Operational Efficiency
- b) Enhanced Data Gathering
- c) Reduced Security Risks
- d) Scalability
  Answer: c) Reduced Security Risks

7. How does IIoT (Industrial IoT) improve predictive maintenance?

- a) By shutting down equipment at fixed intervals
- b) By continuously monitoring machinery conditions and predicting failures before they happen
- c) By reducing overall energy consumption in factories
- d) By increasing the number of machines needed for the process
  Answer: b) By continuously monitoring machinery conditions and predicting failures before they happen

8. What is M2M (Machine-to-Machine) communication primarily used for?

- a) Human-to-device interaction
- b) Direct data exchange between devices without human intervention
- c) Video conferencing
- d) Social media data sharing
  Answer: b) Direct data exchange between devices without human intervention

9. Which of the following is NOT a step in converting a machine into a smart device?

- a) Add Sensors
- b) Enable Connectivity
- c) Install Mechanical Controllers
- d) Apply Software Algorithms
  Answer: c) Install Mechanical Controllers

10. What is the role of Edge Computing in IoT devices?

- a) To process data locally, reducing latency and dependency on the cloud
- b) To store data in the cloud for future analysis
- c) To increase the energy consumption of IoT devices
- d) To replace all cloud-based data storage systems
  Answer: a) To process data locally, reducing latency and dependency on the cloud

Unit 4:

MCQs on IoT Security

1. What is the primary goal of IoT security?

a) To reduce costs of IoT devices
b) To ensure data availability, integrity, and confidentiality
c) To increase the speed of IoT device communication
d) To make IoT deployment simpler
Answer: b) To ensure data availability, integrity, and confidentiality

2. Which of the following is NOT an IoT vulnerability?

a) Use of outdated components
b) Weak encryption protocols
c) Insecure physical hardening
d) High computational efficiency
Answer: d) High computational efficiency

4. What is the first step in securing an IoT deployment?

a) Implementing AI-based monitoring
b) Conducting a security risk assessment
c) Installing robust firewalls
d) Limiting network bandwidth
Answer: b) Conducting a security risk assessment

5. What is the primary purpose of IoT threat modeling?

a) To optimize network speed
b) To identify and quantify security risks
c) To ensure backward compatibility
d) To enhance device usability
Answer: b) To identify and quantify security risks

7. What is a recommended solution for insecure network services in IoT?

a) Use of anti-rollback mechanisms
b) Adoption of strong passwords
c) Employing secure communication protocols
d) Removing device management features
Answer: c) Employing secure communication protocols

9. Which of the following is NOT a common IoT security challenge?

a) Lack of secure update mechanisms
b) Insecure data transfer
c) Excessive physical hardening
d) Default passwords
Answer: c) Excessive physical hardening

12. How can insecure default settings affect IoT devices?

a) They limit device performance
b) They restrict firmware updates
c) They allow attackers to exploit hidden backdoors
d) They increase encryption strength
Answer: c) They allow attackers to exploit hidden backdoors

13. What is the purpose of identity establishment in IoT security?

a) To track device location
b) To verify devices using digital certificates
c) To update software automatically
d) To simplify user authentication
Answer: b) To verify devices using digital certificates

15. What is the best practice to minimize IoT security risks?

a) Avoid updating firmware
b) Disable multi-factor authentication
c) Keep IoT devices up to date with software updates
d) Use the same password for all devices
Answer: c) Keep IoT devices up to date with software updates

Unit 5:

Advantages and Disadvantages of Combining Fog Computing in IoT

1. **What is one key advantage of using fog computing with IoT devices?**
    - A) Increased latency
    - B) Reduced bandwidth usage
    - C) Centralized data storage

- D) Simplified management
  Answer: B) Reduced bandwidth usage

2. **Which of the following is a disadvantage of combining fog computing and IoT?**
   - A) Enhanced security
   - B) Increased latency
   - C) Standardization issues
   - D) Improved reliability
     Answer: C) Standardization issues
3. **How does fog computing improve reliability in IoT systems?**
   - A) By reducing energy consumption
   - B) By ensuring real-time data processing
   - C) By allowing applications to function even without cloud connectivity
   - D) By simplifying node management
     Answer: C) By allowing applications to function even without cloud connectivity

Challenges in Deployment of IoT Projects on Fog Computing

4. **What is a primary challenge when deploying IoT projects on fog computing?**
   - A) Lower energy consumption at the edge
   - B) Limited hardware requirements
   - C) Interoperability between fog nodes and cloud services
   - D) Simplified deployment
     Answer: C) Interoperability between fog nodes and cloud services
5. **Which challenge in fog computing deployment involves the risk of cyber-attacks due to distributed architecture?**
   - A) Resource and energy management
   - B) Scalability
   - C) Security risks
   - D) Network dependency
     Answer: C) Security risks

Challenges in Deployment of IoT Projects on Cloud Computing

6. **What is a key challenge in deploying IoT projects on cloud computing?**
   - A) Scalability limitations
   - B) Inconsistent data storage
   - C) High energy consumption
   - D) Network reliability and latency
     Answer: D) Network reliability and latency
7. **Which of the following is a cost-related challenge in cloud-based IoT deployments?**
   - A) Energy efficiency
   - B) Constant data streaming and storage costs
   - C) Simplified infrastructure management

- D) Limited scalability
  Answer: B) Constant data streaming and storage costs

Best Practices for Implementing IoT Middleware on Cloud Computing

10. **Which is a best practice for implementing IoT middleware on cloud computing?**
- A) Ignoring device updates
- B) Not optimizing data storage
- C) Ensuring data security and privacy through encryption
- D) Limiting interoperability to a single protocol
  Answer: C) Ensuring data security and privacy through encryption

11. **Why is interoperability crucial in IoT middleware?**
- A) To reduce energy consumption
- B) To allow seamless communication between diverse IoT devices
- C) To prevent bandwidth issues
- D) To simplify cloud-to-device connections
  Answer: B) To allow seamless communication between diverse IoT devices

Limitations and Importance of Cloud Computing

12. **Which of the following is a limitation of cloud computing?**
- A) Scalability
- B) Security risks
- C) Disaster recovery
- D) Accessibility
  Answer: B) Security risks

13. **Why is scalability considered an important feature of cloud computing?**
- A) It simplifies network management
- B) It reduces the need for encryption
- C) It allows resources to be scaled up or down based on demand
- D) It limits real-time application support
  Answer: C) It allows resources to be scaled up or down based on demand

Unit 6:

Smart Irrigation System

1. **What is the main goal of a smart irrigation system?**
   - A) To reduce the growth of plants
   - B) To minimize water usage while optimizing plant growth
   - C) To increase water consumption
   - D) To monitor soil temperature only
     Answer: B) To minimize water usage while optimizing plant growth

2. **Which sensor is most commonly used in smart irrigation systems to measure soil moisture?**
    - A) Temperature sensor
    - B) Humidity sensor
    - C) Soil moisture sensor
    - D) Light sensor

    Answer: C) Soil moisture sensor

Air Pollution System

3. **What is the primary function of an air pollution monitoring system?**
    - A) To predict rainfall
    - B) To detect and measure pollutants in the air
    - C) To monitor indoor temperature
    - D) To enhance crop growth

    Answer: B) To detect and measure pollutants in the air
4. **Which of the following is a major air pollutant that smart air pollution systems can detect?**
    - A) Carbon dioxide (CO_2)
    - B) Water vapor (H_2O)
    - C) Oxygen (O_2)
    - D) Nitrogen (N_2)

    Answer: A) Carbon dioxide (CO_2)

Weather System

5. **What is the purpose of a smart weather system?**
    - A) To monitor air quality
    - B) To collect and analyze data on temperature, humidity, and precipitation
    - C) To manage irrigation in farms
    - D) To track animal migration

    Answer: B) To collect and analyze data on temperature, humidity, and precipitation
6. **Which device is commonly used in weather systems to measure wind speed?**
    - A) Barometer
    - B) Thermometer
    - C) Anemometer
    - D) Rain gauge

    Answer: C) Anemometer

Traffic Management

7. **What is the primary objective of a smart traffic management system?**
    - A) To reduce the number of vehicles on the road

- B) To monitor and optimize the flow of traffic in real-time
- C) To increase traffic congestion
- D) To monitor road construction

  Answer: B) To monitor and optimize the flow of traffic in real-time

8. **Which technology is often used in smart traffic systems to detect the presence of vehicles at intersections?**
   - A) GPS
   - B) Infrared sensors
   - C) Light sensors
   - D) Speedometers

     Answer: B) Infrared sensors

Smart Home

9. **Which of the following is a feature of a smart home system?**
   - A) Manually switching lights on and off
   - B) Automating home functions like lighting, heating, and security
   - C) Using only mechanical locks for doors
   - D) Disconnecting from the internet

     Answer: B) Automating home functions like lighting, heating, and security
10. **What is one key benefit of a smart home system?**

- A) Increased energy consumption
- B) Reduced security
- C) Improved convenience and energy efficiency
- D) Only manual control of devices

  Answer: C) Improved convenience and energy efficiency