1. What is a fundamental concept of IoT networking?

a) Centralized data storage
b) Decentralized data processing
c) Hierarchical data transmission
d) Serial data communication

Answer: b) Decentralized data processing
Explanation: IoT networking typically involves decentralized data processing where data is processed locally on devices or at the edge rather than relying on a central server.

2. Which of the following is NOT a component of IoT systems?

a) Sensors
b) Actuators
c) Relays
d) Routers

Answer: d) Routers
Explanation: While routers may be used in IoT networking, they are not considered as direct components of IoT systems. Sensors, actuators, and relays are essential components.

3. Which architectural approach emphasizes reusable services for IoT applications?

a) Monolithic architecture
b) Microservices architecture
c) Service-Oriented Architecture (SOA)
d) Event-Driven Architecture

Answer: c) Service-Oriented Architecture (SOA)
Explanation: SOA focuses on building reusable services that can be utilized across various applications, which aligns well with the diverse needs of IoT systems.

4. What is a key challenge in IoT deployment related to data security?

a) Limited bandwidth
b) Interoperability
c) Scalability
d) Privacy concerns

Answer: d) Privacy concerns
Explanation: Privacy concerns, including data security and protection, are significant challenges in IoT deployments due to the vast amount of sensitive data being generated and transmitted.

5. Which protocol is specifically designed for low-power, low-rate wireless personal area networks (WPANs)?

a) HTTP
b) MQTT
c) 6LowPAN
d) CoAP

Answer: c) 6LowPAN
Explanation: 6LowPAN (IPv6 over Low-Power Wireless Personal Area Networks) is designed to enable the transmission of IPv6 packets over low-power, low-rate wireless networks commonly used in IoT applications.

6. Which IEEE standard is associated with low-rate wireless personal area networks (LR-WPANs)?

a) IEEE 802.11
b) IEEE 802.15.4
c) IEEE 802.3
d) IEEE 802.16

Answer: b) IEEE 802.15.4
Explanation: IEEE 802.15.4 is a standard for low-rate wireless personal area networks, providing the physical (PHY) and medium access control (MAC) layers for LR-WPANs.

7. Which technology is based on IEEE 802.15.4 standard and commonly used for home automation and smart lighting?

a) Bluetooth
b) ZigBee
c) Wi-Fi
d) NFC

Answer: b) ZigBee
Explanation: ZigBee is a wireless communication technology based on IEEE 802.15.4 standard, often utilized in home automation, smart lighting, and industrial applications.

8. Among the following, which is NOT a type of ZigBee network?

a) ZigBee Home Automation
b) ZigBee Light Link

c) ZigBee Personal Area Network
d) ZigBee Green Power

Answer: c) ZigBee Personal Area Network
Explanation: ZigBee Personal Area Network (PAN) is a misnomer; ZigBee networks are commonly used for home automation, lighting, and other applications, but they are not specifically referred to as “Personal Area Network.”

9. Which technology relies on electromagnetic fields for communication and is commonly used for inventory tracking?

a) ZigBee
b) Bluetooth
c) RFID
d) NFC

Answer: c) RFID
Explanation: Radio Frequency Identification (RFID) technology uses electromagnetic fields to automatically identify and track tags attached to objects, commonly used in inventory tracking and logistics.

10. What is the working principle of RFID technology?

a) It uses radio waves to communicate between devices.
b) It relies on magnetic induction for data transmission.
c) It utilizes infrared signals for proximity-based communication.
d) It employs ultrasonic waves for long-range communication.

Answer: a) It uses radio waves to communicate between devices.
Explanation: RFID technology utilizes radio waves for communication between RFID tags and readers, allowing for wireless identification and tracking of objects.

11. NFC (Near Field Communication) is commonly used for:

a) Long-range wireless communication
b) Contactless payments and ticketing
c) High-speed data transfer over long distances
d) Industrial automation

Answer: b) Contactless payments and ticketing
Explanation: NFC technology is frequently used for contactless payments, ticketing systems, access control, and other applications where short-range communication is required.

12. Bluetooth technology is typically used for:

a) Long-range communication
b) Low-power applications
c) High-bandwidth data transfer
d) Ultra-low latency applications

Answer: b) Low-power applications
Explanation: Bluetooth technology is well-suited for low-power applications such as wireless headphones, wearable devices, and IoT sensors due to its efficient power consumption.

13. Wireless Sensor Networks (WSNs) find applications in:

a) Environmental monitoring
b) Industrial automation
c) Healthcare
d) All of the above

Answer: d) All of the above
Explanation: WSNs have a wide range of applications including environmental monitoring, industrial automation, healthcare, agriculture, and more, due to their ability to collect and transmit data from distributed sensors.

14. What is a primary advantage of Wireless Sensor Networks (WSNs)?

a) High data transmission rates
b) Low initial deployment cost
c) Immunity to environmental interference
d) Unlimited scalability

Answer: b) Low initial deployment cost
Explanation: WSNs offer the advantage of relatively low initial deployment costs compared to wired sensor networks due to their wireless nature, making them suitable for large-scale deployments.

15. Which of the following is NOT a typical application of RFID technology?

a) Asset tracking
b) Inventory management
c) Contactless payments
d) Real-time location tracking

Answer: c) Contactless payments
Explanation: While NFC (Near Field Communication) technology is commonly used for contactless payments, RFID technology is typically employed for asset tracking, inventory management, and real-time location tracking.

16. Which of the following is a limitation of ZigBee technology?

a) High power consumption
b) Short range
c) Limited network scalability
d) High data transmission rates

Answer: b) Short range
Explanation: ZigBee technology typically operates over short distances, making it less suitable for applications requiring long-range communication.

17. Which protocol is specifically designed for low-power, low-bandwidth IoT devices?

a) HTTP
b) MQTT
c) CoAP
d) AMQP

Answer: c) CoAP (Constrained Application Protocol)
Explanation: CoAP is designed for constrained devices and networks, providing a lightweight communication protocol suitable for IoT applications with limited resources.

18. Which of the following is NOT a challenge in IoT deployment?

a) Data privacy and security
b) Scalability
c) Interoperability
d) Abundance of standardized protocols

Answer: d) Abundance of standardized protocols
Explanation: While interoperability due to a multitude of standardized protocols can be a challenge, an abundance of standardized protocols themselves is not typically considered a challenge in IoT deployment.

19. Which type of ZigBee network is primarily focused on energy efficiency and battery-powered devices?

a) ZigBee Home Automation
b) ZigBee Light Link
c) ZigBee Personal Area Network
d) ZigBee Green Power

Answer: d) ZigBee Green Power
Explanation: ZigBee Green Power is specifically designed for energy-efficient and battery-powered devices, enabling long battery life and minimal power consumption.

20. What is the main advantage of NFC (Near Field Communication) technology over Bluetooth for certain applications?

a) Longer range
b) Higher data transfer rates
c) Lower power consumption

d) Greater device compatibility

Answer: c) Lower power consumption
Explanation: NFC technology typically consumes less power compared to Bluetooth, making it advantageous for certain applications, especially those requiring frequent short-range communication, such as contactless payments.

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