1. Which transport layer protocol is generally unsuitable for mobile networks due to its reliance on end-to-end acknowledgments and congestion control?
a) UDP
b) TCP
c) ICMP
d) SCTP

Answer: b) TCP
Explanation: Traditional TCP (Transmission Control Protocol) relies on end-to-end acknowledgments and congestion control mechanisms, which may not be suitable for mobile networks due to their dynamic and often unreliable nature.

2. What modification was proposed in I-TCP to address the limitations of Traditional TCP in mobile environments?
a) Improved congestion control
b) Reduced retransmission timeout
c) Splitting of the TCP connection
d) Enhanced encryption algorithms

Answer: c) Splitting of the TCP connection
Explanation: I-TCP (Indirect TCP) proposed splitting the TCP connection into two parts: one between the sender and a nearby base station, and the other between the receiver and a nearby base station, to better handle mobility and handovers.

3. Which transport layer protocol aims to improve performance over wireless links by adjusting its congestion control mechanisms?
a) SCTP

b) I-TCP
c) S-TCP
d) M-TCP

Answer: c) S-TCP
Explanation: S-TCP (Split-TCP) aims to enhance performance over wireless links by modifying congestion control mechanisms to adapt to the characteristics of the wireless medium.

4. What is the primary goal of M-TCP (Mobile TCP)?
a) To provide secure communication in mobile networks
b) To improve reliability of TCP in mobile environments
c) To optimize TCP performance for high-speed mobile data
d) To enhance TCP for seamless handovers in cellular networks

Answer: b) To improve reliability of TCP in mobile environments
Explanation: M-TCP (Mobile TCP) focuses on enhancing the reliability of TCP in mobile environments by addressing issues such as packet loss and frequent handovers.

5. Which of the following is a characteristic feature of cellular systems?
a) Point-to-point communication
b) Broadcast communication
c) Centralized control
d) Ad hoc networking

Answer: c) Centralized control
Explanation: Cellular systems feature centralized control through base stations, which manage communication within specific cells and coordinate handovers between cells.

6. How do cellular networks differ from WLAN (Wireless Local Area Networks)?
a) Cellular networks have smaller coverage areas than WLANs
b) WLANs use licensed spectrum, while cellular networks use unlicensed spectrum
c) Cellular networks rely on centralized base stations, while WLANs use distributed access points
d) WLANs support mobility, while cellular networks do not

Answer: c) Cellular networks rely on centralized base stations, while WLANs use distributed access points
Explanation: Cellular networks are characterized by centralized base stations that manage communication within cells, whereas WLANs use distributed access points for coverage and communication.

7. Which of the following services is NOT typically offered by GSM (Global System for Mobile Communications)?
a) Voice calls
b) Short Message Service (SMS)
c) Multimedia Messaging Service (MMS)
d) Video streaming

Answer: d) Video streaming
Explanation: While modern cellular networks may support video streaming, it was not a typical service offered by GSM, which primarily focused on voice calls, SMS, and later, MMS.

8. What is the primary function of the Home Location Register (HLR) in GSM architecture?
a) Routing incoming calls to the appropriate base station
b) Storing subscriber data and mobility information

c) Authenticating users during handovers
d) Assigning IP addresses to mobile devices

Answer: b) Storing subscriber data and mobility information
Explanation: The HLR in GSM architecture is responsible for storing subscriber data, including user profiles and mobility information, such as location updates and authentication keys.

9. How does localization and calling work in GSM networks?
a) By using GPS coordinates for all communication
b) By triangulating the signal strength from nearby base stations
c) By assigning unique IP addresses to each mobile device
d) By broadcasting messages to all devices in the coverage area

Answer: b) By triangulating the signal strength from nearby base stations
Explanation: Localization in GSM networks is achieved by triangulating the signal strength from nearby base stations, allowing the network to determine the approximate location of a mobile device.

10. What is the purpose of handover in cellular networks?
a) To transfer ongoing calls between base stations
b) To switch between different frequency bands
c) To change the cellular network operator
d) To enable seamless roaming between countries

Answer: a) To transfer ongoing calls between base stations
Explanation: Handover in cellular networks involves transferring an ongoing call or data session from one base station to another to maintain connectivity as a mobile device moves

between cells.

11. Which process allows a mobile device to maintain connectivity while moving between different cellular networks?
a) Localization
b) Roaming
c) Handover
d) Registration

Answer: b) Roaming
Explanation: Roaming enables a mobile device to maintain connectivity while moving between different cellular networks, allowing subscribers to use services even when outside their home network's coverage area.

12. In cellular networks, what triggers the initiation of handover?
a) Change in signal strength
b) Arrival of an incoming call
c) Movement of a mobile device between cells
d) Expiry of a timer set by the network

Answer: a) Change in signal strength
Explanation: Handover in cellular networks is typically triggered by a change in signal strength, indicating that the mobile device is moving towards the edge of the current cell's coverage area.

13. Which of the following is NOT a type of handover in cellular networks?
a) Intra-cell handover

b) Inter-cell handover
c) Inter-system handover
d) Intra-network handover

Answer: d) Intra-network handover
Explanation: Intra-network handover is not a recognized type of handover in cellular networks. The correct types are intra-cell, inter-cell, and inter-system handover.

14. What technology enables seamless handover between different types of cellular networks, such as GSM and UMTS?
a) SIM cards
b) Dual-SIM functionality
c) IP Multimedia Subsystem (IMS)
d) Inter-Radio Access Technology (IRAT) handover

Answer: d) Inter-Radio Access Technology (IRAT) handover
Explanation: IRAT handover enables seamless handover between different types of cellular networks, allowing continuity of services as a mobile device moves between networks like GSM, UMTS, and LTE.

15. Which component manages subscriber authentication and security in GSM networks?
a) SIM card
b) Base station controller
c) Visitor Location Register (VLR)
d) Mobile Switching Center (MSC)

Answer: a) SIM card

Explanation: Subscriber authentication and security in GSM networks are managed by the SIM (Subscriber Identity Module) card, which stores subscriber-specific information and authentication keys.

16. What role does the Visitor Location Register (VLR) play in GSM networks?
a) Storing subscriber data for roaming users
b) Routing incoming calls to the appropriate base station
c) Authenticating users during handovers
d) Assigning IP addresses to mobile devices

Answer: a) Storing subscriber data for roaming users
Explanation: The VLR in GSM networks is responsible for temporarily storing subscriber data for roaming users within its coverage area, facilitating seamless service provision when subscribers move between networks.

17. Which technology allows mobile devices to maintain connectivity while moving between different WLAN access points?
a) IP roaming
b) Handover
c) SSID switching
d) WPA encryption

Answer: b) Handover
Explanation: Handover is the technology that enables mobile devices to maintain connectivity while moving between different WLAN access points, ensuring uninterrupted service as users move within a WLAN’s coverage area.

18. In GSM networks, what is the purpose of the Authentication Center (AuC)?
a) Routing incoming calls to the appropriate base station
b) Storing subscriber data for roaming users
c) Generating authentication parameters for subscriber validation
d) Assigning IP addresses to mobile devices

Answer: c) Generating authentication parameters for subscriber validation
Explanation: The Authentication Center (AuC) in GSM networks generates authentication parameters and encryption keys used for subscriber validation and secure communication within the network.

19. Which entity is responsible for managing call setup and routing in GSM networks?
a) Base station
b) Mobile Switching Center (MSC)
c) Home Location Register (HLR)
d) Serving GPRS Support Node (SGSN)

Answer: b) Mobile Switching Center (MSC)
Explanation: The Mobile Switching Center (MSC) in GSM networks is responsible for call setup, routing, and switching functions, ensuring efficient communication between mobile devices and other network elements.

20. What feature allows subscribers to receive calls even when their mobile devices are turned off or out of coverage?
a) Call forwarding
b) Voice mail
c) SMS notification

d) Paging

Answer: d) Paging
Explanation: Paging is the feature in cellular networks that allows subscribers to receive calls even when their mobile devices are turned off or out of coverage by broadcasting incoming call notifications to nearby base stations.

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