Section 1: Introduction to Computer Networks (History)

1. **What is a computer network?**
   a) A single computer system
   b) A collection of interconnected devices that share resources
   c) A standalone computer processing data
   d) A computer with no peripherals
2. **Which network concept was used in the first generation of networks?**
   a) Packet switching
   b) Circuit switching
   c) Message switching
   d) Hybrid switching
3. **ARPANET, the predecessor of the Internet, was first launched in which year?**
   a) 1965
   b) 1969
   c) 1973
   d) 1983
4. **The first message sent over ARPANET was:**
   a) Hello, World
   b) Login
   c) LO
   d) Ping
5. **Which organization played a significant role in developing ARPANET?**
   a) NASA
   b) DARPA
   c) IEEE
   d) ITU
6. **Who is often called the 'Father of the Internet'?**
   a) Tim Berners-Lee
   b) Vint Cerf
   c) Robert Kahn
   d) Both b and c
7. **The OSI model was developed to standardize:**
   a) Hardware specifications
   b) Network protocols
   c) Software development
   d) All of the above
8. **Which of the following networks relies on centralized control?**
   a) Peer-to-peer network
   b) Client-server network
   c) Mesh network
   d) Ring network
9. **Who invented the World Wide Web?**
   a) Vint Cerf
   b) Tim Berners-Lee
   c) Robert Metcalfe
   d) Larry Roberts
10. **What is the primary purpose of a computer network?**
    a) Data storage
    b) Resource sharing

c) Data redundancy
d) Error correction

Section 2: Circuit Switching

11. **Circuit switching requires:**
    a) Establishing a dedicated communication path
    b) Dividing data into packets
    c) Storing messages temporarily
    d) Broadcasting data
12. **In circuit switching, resources are:**
    a) Shared among users
    b) Dedicated for the entire communication session
    c) Allocated only on demand
    d) Not required
13. **Which is an example of circuit switching?**
    a) Internet
    b) Traditional telephone networks
    c) Ethernet LAN
    d) Wi-Fi networks
14. **The main disadvantage of circuit switching is:**
    a) High latency
    b) Resource wastage during idle times
    c) Inefficient for real-time communication
    d) Packet loss
15. **What happens if a circuit is disrupted during a call?**
    a) Call continues as packets reroute
    b) Call is dropped
    c) Call automatically reconnects
    d) Call quality improves
16. **In circuit switching, connection setup time is:**
    a) Negligible
    b) Significant
    c) Variable
    d) Zero
17. **What is an advantage of circuit switching?**
    a) High data efficiency
    b) Consistent quality of service (QoS)
    c) Low resource requirements
    d) Packet priority
18. **Which of the following layers does circuit switching operate on?**
    a) Physical Layer
    b) Transport Layer
    c) Network Layer
    d) Data Link Layer
19. **Which switching method is most suitable for voice communication?**
    a) Packet switching
    b) Circuit switching

c) Message switching
d) Bus switching

20. **How does circuit switching handle bandwidth allocation?**
    a) On-demand allocation
    b) Permanent allocation
    c) Dynamic reallocation
    d) Shared allocation

Section 3: Packet Switching

21. **What is packet switching?**
    a) Sending data as a continuous stream
    b) Dividing data into packets and sending them independently
    c) Establishing a dedicated path
    d) Storing data temporarily for later delivery
22. **Packet switching primarily improves:**
    a) Latency
    b) Bandwidth utilization
    c) Connection establishment time
    d) Fixed bandwidth
23. **What protocol does the Internet use for packet switching?**
    a) TCP/IP
    b) SMTP
    c) HTTP
    d) FTP
24. **In packet switching, packets:**
    a) Are sent along a dedicated path
    b) Travel independently through the network
    c) Are received simultaneously
    d) Cannot be reordered
25. **What is an advantage of packet switching?**
    a) Low latency for real-time communication
    b) Efficient use of network resources
    c) Guaranteed connection during communication
    d) Fixed delays
26. **Packet switching is most suitable for:**
    a) Voice calls
    b) Internet data transmission
    c) Television broadcast
    d) Satellite communication
27. **Which of the following is an example of a packet-switched network?**
    a) Telephone network
    b) Internet
    c) Circuit-switched systems
    d) Bluetooth
28. **How are packets identified in a packet-switched network?**
    a) Header information
    b) File names

c) Channel numbers
d) Time stamps

29. **The term 'datagram' is associated with which protocol?**
    a) TCP
    b) UDP
    c) FTP
    d) ARP
30. **Packet switching improves reliability because:**
    a) Packets take fixed paths
    b) Redundant paths are available
    c) Connections are dedicated
    d) Transmission is loss-free

Section 4: Comparison Between Switching Techniques

31. **What is the key difference between circuit switching and packet switching?**
    a) Circuit switching requires fixed bandwidth; packet switching does not.
    b) Packet switching has lower delays than circuit switching.
    c) Circuit switching is used for emails.
    d) Packet switching uses dedicated connections.
32. **Which switching type offers better utilization of resources?**
    a) Circuit switching
    b) Packet switching
    c) Both equally
    d) None
33. **Which of the following is a hybrid of circuit and packet switching?**
    a) Store-and-forward switching
    b) Virtual circuit switching
    c) Datagram switching
    d) Message switching
34. **Which technology is used in VoIP services like Skype?**
    a) Circuit switching
    b) Packet switching
    c) Virtual connections
    d) Message switching
35. **Why is circuit switching inefficient for data traffic?**
    a) Data is continuous
    b) Idle resources remain unused
    c) It guarantees QoS
    d) Delays are minimal
36. **Which technique is more suitable for real-time voice communication?**
    a) Circuit switching
    b) Packet switching
    c) Datagram switching
    d) Ethernet
37. **In packet switching, delays can occur due to:**
    a) High bandwidth
    b) Packet routing

c) Fixed connections
d) Dedicated resources

38. **What ensures packets arrive in the correct order?**
    a) IP address
    b) Packet sequence numbers
    c) Port numbers
    d) Network ID
39. **Which of the following is NOT an advantage of packet switching?**
    a) Efficient resource utilization
    b) High scalability
    c) Guaranteed low latency
    d) Redundancy of paths
40. **Packet switching was developed primarily to handle:**
    a) Voice traffic
    b) Email traffic
    c) Bursty data traffic
    d) Fixed communication

Answers

1. b | 2. b | 3. b | 4. c | 5. b | 6. d | 7. b | 8. b | 9. b | 10. b
2. a | 12. b | 13. b | 14. b | 15. b | 16. b | 17. b | 18. a | 19. b | 20. b
3. b | 22. b | 23. a | 24. b | 25. b | 26. b | 27. b | 28. a | 29. b | 30. b
4. a | 32. b | 33. b | 34. b | 35. b | 36. a | 37. b | 38. b | 39. c | 40. c

Section 1: OSI Model Basics

1. **How many layers are there in the OSI Model?**
    a) 5
    b) 6
    c) 7
    d) 8
2. **Which layer of the OSI model is responsible for end-to-end communication?**
    a) Data Link Layer
    b) Network Layer
    c) Transport Layer
    d) Application Layer
3. **The Physical Layer of the OSI model deals with:**
    a) Data framing
    b) Logical addressing
    c) Bit-by-bit transmission
    d) Error correction
4. **Which layer provides error detection and correction mechanisms?**
    a) Physical Layer
    b) Data Link Layer
    c) Network Layer
    d) Transport Layer

5. **The OSI model was developed by:**
   a) IEEE
   b) ISO
   c) IETF
   d) W3C
6. **Which layer of the OSI model adds logical addressing to the data?**
   a) Data Link Layer
   b) Network Layer
   c) Transport Layer
   d) Presentation Layer
7. **The main function of the Presentation Layer is to:**
   a) Provide physical connections
   b) Provide logical addressing
   c) Format and encrypt data
   d) Manage sessions
8. **Which of the following protocols operates at the Application Layer?**
   a) TCP
   b) IP
   c) HTTP
   d) Ethernet
9. **Which layer is responsible for routing data between different networks?**
   a) Physical Layer
   b) Network Layer
   c) Transport Layer
   d) Application Layer
10. **What is the PDU (Protocol Data Unit) at the Transport Layer?**
    a) Frame
    b) Packet
    c) Segment
    d) Bits

Section 2: Functions of Each OSI Layer

11. **At which OSI layer do switches operate?**
    a) Network Layer
    b) Data Link Layer
    c) Transport Layer
    d) Application Layer
12. **Which device operates at Layer 3 (Network Layer)?**
    a) Hub
    b) Switch
    c) Router
    d) Repeater
13. **Encapsulation of data happens at:**
    a) Network Layer only
    b) Physical Layer
    c) Each layer of the OSI model
    d) Transport Layer only

14. **Which layer handles flow control and windowing?**
    a) Data Link Layer
    b) Network Layer
    c) Transport Layer
    d) Application Layer
15. **The term 'MAC address' is associated with:**
    a) Network Layer
    b) Data Link Layer
    c) Physical Layer
    d) Transport Layer
16. **Which OSI layer is responsible for translating data formats (e.g., encryption, decryption)?**
    a) Application Layer
    b) Presentation Layer
    c) Data Link Layer
    d) Network Layer
17. **What does the Session Layer manage?**
    a) End-to-end delivery
    b) Data synchronization between applications
    c) Logical addressing
    d) Error detection
18. **Which protocol provides reliable communication at the Transport Layer?**
    a) IP
    b) UDP
    c) TCP
    d) ICMP
19. **The Data Link Layer has two sublayers:**
    a) MAC and LLC
    b) LLC and PDU
    c) IP and TCP
    d) Routing and Switching
20. **Which of the following operates at Layer 2?**
    a) Router
    b) Hub
    c) Switch
    d) Gateway

Section 3: Internetworking Devices

21. **A hub operates at which layer of the OSI model?**
    a) Physical Layer
    b) Data Link Layer
    c) Network Layer
    d) Transport Layer
22. **A switch forwards data based on:**
    a) IP address
    b) MAC address

c) Port number
d) Domain name

23. **Which device breaks up collision domains?**
    a) Router
    b) Hub
    c) Switch
    d) Repeater
24. **Routers operate at which layer?**
    a) Physical Layer
    b) Data Link Layer
    c) Network Layer
    d) Transport Layer
25. **What is the role of a gateway?**
    a) Connects networks using the same protocols
    b) Translates protocols between networks
    c) Amplifies signals
    d) Resolves IP addresses
26. **Which device amplifies signals to extend the network range?**
    a) Router
    b) Switch
    c) Repeater
    d) Gateway
27. **Which internetworking device can work across multiple OSI layers?**
    a) Hub
    b) Switch
    c) Router
    d) Gateway
28. **A bridge operates at which OSI layer?**
    a) Physical Layer
    b) Data Link Layer
    c) Network Layer
    d) Transport Layer
29. **A switch uses which address to forward frames?**
    a) IP Address
    b) MAC Address
    c) Port Address
    d) Broadcast Address
30. **Hubs are considered "dumb devices" because:**
    a) They use MAC addresses
    b) They do not filter data
    c) They operate at Layer 3
    d) They store MAC tables

Section 4: OSI Model Protocols

31. **What protocol does the Transport Layer use for connectionless communication?**
    a) IP
    b) TCP

c) UDP
d) ICMP

32. **Which protocol is used to transfer files over the network securely?**
    a) HTTP
    b) FTP
    c) SFTP
    d) SMTP
33. **DNS operates at which OSI layer?**
    a) Application Layer
    b) Transport Layer
    c) Network Layer
    d) Presentation Layer
34. **ICMP operates at which layer?**
    a) Network Layer
    b) Data Link Layer
    c) Transport Layer
    d) Physical Layer
35. **HTTP and HTTPS are protocols of which layer?**
    a) Presentation Layer
    b) Session Layer
    c) Application Layer
    d) Data Link Layer
36. **What protocol is used for email delivery?**
    a) SMTP
    b) FTP
    c) TCP
    d) POP
37. **ARP resolves:**
    a) IP addresses to MAC addresses
    b) MAC addresses to IP addresses
    c) Domain names to IP addresses
    d) IP addresses to domain names
38. **Which protocol provides network time synchronization?**
    a) NTP
    b) ARP
    c) DNS
    d) HTTP
39. **What does the RIP protocol help with?**
    a) Routing
    b) Address translation
    c) DNS resolution
    d) File transfer
40. **What type of protocol is SNMP?**
    a) Management Protocol
    b) Routing Protocol
    c) Transport Protocol
    d) Address Resolution Protocol

Section 5: Miscellaneous

41. **Which layer converts frames into bits?**
    a) Network Layer
    b) Physical Layer
    c) Transport Layer
    d) Data Link Layer
42. **What is the main role of the Network Layer?**
    a) Error detection
    b) Addressing and routing
    c) Synchronizing sessions
    d) Ensuring encryption
43. **Which address is used at Layer 3?**
    a) MAC address
    b) IP address
    c) Port address
    d) None of the above
44. **What is the purpose of TCP?**
    a) Provide unreliable communication
    b) Provide reliable, connection-oriented communication
    c) Resolve IP addresses
    d) Manage encryption
45. **Which protocol translates domain names into IP addresses?**
    a) DNS
    b) ARP
    c) ICMP
    d) DHCP
46. **What layer is responsible for establishing, managing, and terminating sessions?**
    a) Presentation Layer
    b) Application Layer
    c) Session Layer
    d) Transport Layer
47. **Which OSI layer ensures data integrity?**
    a) Data Link Layer
    b) Transport Layer
    c) Network Layer
    d) Physical Layer
48. **What protocol does DHCP use to assign IP addresses dynamically?**
    a) TCP
    b) UDP
    c) ICMP
    d) ARP
49. **What type of address does a router use to forward data?**
    a) MAC address
    b) IP address
    c) Physical address
    d) Port number
50. **Which device connects two dissimilar networks?**
    a) Hub
    b) Bridge

c) Gateway
d) Repeater

Answers

1. c | 2. c | 3. c | 4. b | 5. b | 6. b | 7. c | 8. c | 9. b | 10. c
2. b | 12. c | 13. c | 14. c | 15. b | 16. b | 17. b | 18. c | 19. a | 20. c
3. a | 22. b | 23. c | 24. c | 25. b | 26. c | 27. d | 28. b | 29. b | 30. b
4. c | 32. c | 33. a | 34. a | 35. c | 36. a | 37. a | 38. a | 39. a | 40. a
5. b | 42. b | 43. b | 44. b | 45. a | 46. c | 47. b | 48. b | 49. b | 50. c