

UNIT 1 MCQ

1. What is a computer network?

- a. A collection of software applications.
- b) A single device connected to the internet.
- c) A graph consisting of end-systems or hosts connected via communication links and packet switches.
- d) A database management system.

2. What are end-systems or hosts?

- a. The devices that facilitate data transfer across the internet.
- b) The core of a computer's operating system.
- c) Devices in a network that run applications generating or receiving data packets.
- d) The software that controls network operations.

3. What is the route or path in a computer network?

- a. A direct connection between two devices in a network.
- b) A set of instructions for data processing.
- c) The sequence of packet switches and communication links that data packets traverse.
- d) A type of network protocol.

4. Who typically administers a computer network?

- a. Multiple independent entities.
- b) The government.
- c) One entity responsible for its configuration and operation.
- d) End users themselves.

5. Which of the following is NOT an example of a computer network?

- a. Home network
- b) Enterprise network
- c) Word processing software
- d) Mobile network

6. What is the internet?

- a. A single network cable.
- b) A computer network that interconnects billions of computing devices worldwide.
- c) A program that runs on a computer.
- d) A local area network (LAN).

7. Who is credited with the invention of the World Wide Web?

- a. Bob Metcalfe
- b) Tim Berners-Lee
- c) Ray Tomlinson
- d) Leonard Kleinrock

8. Who invented email?

- a. Paul Mockapetris
- b) Bob Kahn
- c) Ray Tomlinson
- d) Vincent Cerf

9. What does DNS stand for, and who invented it?

- a. Domain Naming System, Ray Tomlinson
- b) Digital Network System, Tim Berners-Lee
- c) Domain Name System, Paul Mockapetris
- d) Data Networking System, Bob Kahn

10. What is the primary purpose of TCP/IP?

- a. To manage file storage on a local computer.
- b) To interconnect network devices on the internet.
- c) To provide graphics processing capabilities.
- d) To create word processing documents.

11. Which technology was invented by Bob Metcalfe in 1973?

- a. World Wide Web
- b) Email
- c) Packet switching
- d) Ethernet

12. Who provides internet access to end-systems?

- a. Government agencies
 - b) **ISPs (Internet Service Providers)**
 - c) Application developers
 - d) Hardware manufacturers
13. What is a point-of-presence (PoP) in the context of an ISP?
- a. The main headquarters of an ISP.
 - b) **The location where end-systems connect to an ISP network.**
 - c) The physical server that stores internet data.
 - d) The software that manages internet traffic.
14. Which of the following describes the ISP hierarchy correctly?
- a. Access ISPs → Content Service Providers → Tier 1 ISPs
 - b) **Tier 1 ISPs → Regional ISPs → Access ISPs**
 - c) Content Service Providers → Regional ISPs → Access ISPs
 - d) End users → Access ISPs → Tier 1 ISPs
15. How does the internet support distributed applications?
- a. By centralizing all data on a single server.
 - b) **By allowing applications to run independently on hosts and exchange messages.**
 - c) By providing a physical location for applications to be stored.
 - d) By limiting the number of connected devices.
16. What role do protocols play in network communication?
- a. They determine the hardware used in a network.
 - b) **They define the format, order of messages, and actions during transmission.**
 - c) They control the physical layout of network cables.
 - d) They are used only for security purposes.

Slide 2

17. Which of the following best describes the function of a multiplexer in the network core?
- a) Converts analog signals to digital
 - b) **Aggregates traffic from multiple access ISPs**
 - c) Provides security for data transmission
 - d) Manages IP address allocation
18. Which of the following is NOT a characteristic of packet switching?
- a) Data is broken into smaller packets
 - b) **Requires dedicated circuit establishment**
 - c) No reservation of resources
 - d) Suitable for bursty traffic
19. In a circuit-switched network, how are resources allocated during the data transfer?
- a) Dynamically, as needed
 - b) **Reserved at each intermediate router**
 - c) Shared among all users
 - d) Not allocated
20. What is the primary advantage of packet switching over circuit switching?
- a) Guaranteed bandwidth for all users
 - b) **No need for end-to-end circuit establishment**
 - c) No queuing delays
 - d) Fixed data transmission rate
21. Which of the following technologies is used to prevent adjacent channel interference in FDM?
- a) Guard time
 - b) Buffering
 - c) **Guard band**
 - d) Error correction
22. Which of the following statements is true about circuit-switched networks?
- a) Data is divided into packets
 - b) Resources are dynamically allocated
 - c) **Suitable for real-time voice communication**

- d) Packets are stored in buffers before forwarding
23. In TDM, what happens when a transmitting host's time slot ends?
- a) The data transmission continues in the next slot
 - b) The connection is terminated
 - c) **Guard time is added to prevent ISI**
 - d) The slot is immediately reused by another host
24. What type of network topology is typically used in the network core?
- a) Star
 - b) Ring
 - c) **Mesh**
 - d) Bus
25. Which of the following is a primary design problem in the network core?
- a) IP address allocation
 - b) **Flow maximization**
 - c) Data encryption
 - d) User authentication
26. In packet switching, what happens when the rate of packet arrival exceeds the rate of departure?
- a) Data transmission stops
 - b) Packets are discarded
 - c) **The output queue begins to grow**
 - d) The link rate increases
27. What is the main function of the network core?
- a) Connecting end-users to the internet
 - b) **Aggregating traffic from access ISPs**
 - c) Storing data for long periods
 - d) Providing security services
28. Which of the following is true about packet switching?
- a) Requires a dedicated circuit to be established
 - b) **Suitable for bursty traffic**
 - c) Reserved resources throughout the session
 - d) No risk of data loss
29. In which switching method is a circuit established before data transfer?
- a) Packet switching
 - b) **Circuit switching**
 - c) Store and forward switching
 - d) None of the above
30. What does a guard band prevent in Frequency Division Multiplexing (FDM)?
- a) Loss of data packets
 - b) Resource allocation issues
 - c) **Adjacent channel interference**
 - d) Delay in data transfer
31. In TDM, what is the purpose of the guard time in a slot?
- a) To increase data transmission speed
 - b) To prevent data loss
 - c) **To avoid inter-symbol interference (ISI)**
 - d) To store excess data
32. Which statement best describes the role of routers in the network core?
- a) Routers connect end-users directly to the internet.
 - b) **Routers perform switching by transferring packets from one link to another.**
 - c) Routers store large amounts of data for future use.
 - d) Routers aggregate data from multiple ISPs.

Slide 4

33. Which layer of the TCP/IP model is responsible for generating and receiving data on hosts?
- A) Physical layer
 - B) Network layer

C) Application layer

D) Transport layer

34. In the TCP/IP model, what is the main function of the Network layer?

A) Generating data

B) Moving packets hop-by-hop

C) Modulating signals

D) Providing physical interface

35. Which layer is responsible for error checking and synchronization at the receiver?

A) Application layer

B) Transport layer

C) Network layer

D) Link layer

36. Which protocol architecture was proposed as a standardized model with 7 layers?

A) TCP/IP model

B) OSI model

C) ARPANET model

D) Ethernet model

37. What does the Physical layer convert binary data into?

A) Packets

B) Frames

C) Segments

D) Signals

38. Which of the following is NOT a basic requirement of a protocol?

A) Syntax

B) Semantics

C) Routing

D) Timing

39. What is the combination of a packet and its appended header at the Link layer called?

A) Frame

B) Segment

C) Datagram

D) Message

40. Which layer is responsible for providing Quality of Service (QoS) in the TCP/IP model?

A) Physical layer

B) Network layer

C) Transport layer

D) Link layer

41. What technique does the Network layer use to move data between routers?

A) Time Division Multiplexing (TDM)

B) Fragmentation

C) Modulation

D) Demultiplexing

42. Which layer appends a new header to create a segment?

A) Network layer

B) Application layer

C) Transport layer

D) Link layer

43. Which of the following protocols is implemented in the Network layer?

A) HTTP

B) TCP

C) IP

D) FTP

44. What type of data is referred to as a 'message' in the Application layer?

A) Packet

B) Frame

C) Segment

D) Message

45. The process of dividing a large segment into smaller packets is called:
- A) Demultiplexing
 - B) Fragmentation
 - C) Multiplexing
 - D) Modulation
46. Which layer is responsible for pushing packets onto a link using link layer protocols?
- A) Physical layer
 - B) Link layer
 - C) Network layer
 - D) Transport layer
47. In which layer are packets moved hop-by-hop using IP addresses?
- A) Application layer
 - B) Link layer
 - C) Network layer
 - D) Transport layer
48. What is the name given to the combination of a segment and its header in the Network layer?
- A) Datagram
 - B) Frame
 - C) Message
 - D) Packet
49. Which of the following is responsible for converting binary data into signals for transmission?
- A) Network layer
 - B) Transport layer
 - C) Physical layer
 - D) Application layer
50. What is the main function of the Transport layer regarding data from multiple applications?
- A) Fragmentation
 - B) Demultiplexing
 - C) Synchronization
 - D) Multiplexing
51. Which layer ensures the correct sequence and speed matching during communication?
- A) Application layer
 - B) Transport layer
 - C) Network layer
 - D) Physical layer
52. Which protocol layer is closest to the physical hardware in the TCP/IP model?
- A) Application layer
 - B) Link layer
 - C) Network layer
 - D) Physical layer