## Chapter 1 Introduction

1. What is the main goal of Chapter 1?

a) To provide a detailed analysis of network protocols

b) To get a "feel" and "big picture" introduction to networking

c) To explain the technical details of Internet infrastructure

d) To compare different types of networks

Answer: b) To get a "feel" and "big picture" introduction to networking

2. What are hosts in the context of computer networks?

a) Network routers

b) End systems

c) Internet Service Providers

d) Communication links

Answer: b) End systems

3. What does ISP stand for?

a) Internet Security Protocol

b) Internal System Process

c) Internet Service Provider

d) International Standard Protocol

Answer: c) Internet Service Provider

4. Which of the following is NOT considered a type of physical media for network links?

a) Fiber optic cable

b) Coaxial cable

c) Radio waves

d) Ethernet switch

Answer: d) Ethernet switch

5. What is the transmission rate also known as?

a) Bandwidth

b) Latency

c) Throughput

d) Propagation delay

Answer: a) Bandwidth

6. What is the main function of packet switches in a network?

a) To encrypt data

b) To forward packets

c) To compress data

d) To generate network traffic

Answer: b) To forward packets

7. What does HFC stand for in the context of cable internet access?

a) High-Frequency Communication

b) Hybrid Fiber-Coaxial

c) Home Fiber Connection

d) Hyper-Fast Cable

Answer: b) Hybrid Fiber-Coaxial

8. What is the typical downstream transmission rate for cable internet?

a) 1-10 Mbps

b) 10-100 Mbps

c) 40 Mbps - 1.2 Gbps

d) 10-100 Gbps

Answer: c) 40 Mbps - 1.2 Gbps

9. What technology is used in DSL to transmit data over telephone lines?

a) Fiber optics

b) Coaxial cable

c) Twisted pair copper wire

d) Satellite transmission

Answer: c) Twisted pair copper wire

10. What does DSLAM stand for?

a) Digital Subscriber Line Access Multiplexer

b) Data Service Link and Management

c) Direct Satellite Link Access Module

d) Distributed System Local Area Network

Answer: a) Digital Subscriber Line Access Multiplexer

11. Which of the following is NOT typically found in a home network?

a) Router

b) Firewall

c) NAT

d) DSLAM

Answer: d) DSLAM

12. What is the typical range of a wireless LAN (WLAN)?

a) 1-10 meters

b) 10-100 meters

c) 1-10 kilometers

d) 10-100 kilometers

Answer: b) 10-100 meters

13. What is the main difference between guided and unguided media?

a) Guided media use copper wire, unguided use fiber optics

b) Guided media are faster, unguided are slower

c) Guided media use solid materials, unguided propagate freely

d) Guided media are more secure, unguided are less secure

Answer: c) Guided media use solid materials, unguided propagate freely

14. Which of the following is an example of guided media?

a) Radio waves

b) Satellite transmission

c) Fiber optic cable

d) Bluetooth

Answer: c) Fiber optic cable

15. What is the main advantage of fiber optic cable over copper wire?

a) Lower cost

b) Easier installation

c) Higher data rates over longer distances

d) Better resistance to physical damage

Answer: c) Higher data rates over longer distances

16. What is the primary function of routing in a network?

a) Encrypting data packets

b) Determining source-destination paths for packets

c) Compressing data for transmission

d) Managing network congestion

Answer: b) Determining source-destination paths for packets

17. What is the difference between forwarding and routing?

a) Forwarding is global, routing is local

b) Forwarding is faster, routing is slower

c) Forwarding is a local action, routing is a global action

d) Forwarding uses IP addresses, routing uses MAC addresses

Answer: c) Forwarding is a local action, routing is a global action

18. What is store-and-forward transmission in packet switching?

a) Storing packets indefinitely before forwarding

b) Forwarding packets immediately upon receipt

c) Waiting for the entire packet to arrive before forwarding

d) Splitting packets into smaller fragments before forwarding

Answer: c) Waiting for the entire packet to arrive before forwarding

19. What causes queueing delay in routers?

a) Slow processing speed of routers

b) Limited bandwidth of outgoing links

c) Packet arrival rate exceeding outgoing link capacity

d) Large packet sizes

Answer: c) Packet arrival rate exceeding outgoing link capacity

20. What is the main difference between packet switching and circuit switching?

a) Packet switching is faster, circuit switching is slower

b) Packet switching uses dedicated resources, circuit switching shares resources

c) Packet switching is more reliable, circuit switching is less reliable

d) Packet switching shares resources, circuit switching uses dedicated resources

Answer: d) Packet switching shares resources, circuit switching uses dedicated resources

21. What is an Internet Exchange Point (IXP)?

a) A place where ISPs connect directly to each other

b) A central authority that manages the Internet

c) A type of router used in the Internet backbone

d) A satellite communication hub

Answer: a) A place where ISPs connect directly to each other

22. What is a tier-1 ISP?

a) A local Internet Service Provider

b) A national or international ISP with global coverage

c) A content provider network

d) A regional Internet Service Provider

Answer: b) A national or international ISP with global coverage

23. What are the four main sources of packet delay in networks?

a) Processing, queueing, transmission, and propagation delays

b) Encryption, decryption, compression, and decompression delays

c) Routing, forwarding, switching, and multiplexing delays

d) Sending, receiving, acknowledging, and retransmitting delays

Answer: a) Processing, queueing, transmission, and propagation delays

24. What is the transmission delay of a 1000-bit packet on a 100 Mbps link?

a) 0.01 ms

b) 0.1 ms

c) 1 ms

d) 10 ms

Answer: a) 0.01 ms

25. What is the main cause of packet loss in networks?

a) Electromagnetic interference

b) Router processing errors

c) Buffer overflow in routers

d) Transmission media failures

Answer: c) Buffer overflow in routers

26. What is throughput in the context of network performance?

a) The number of packets transmitted per second

b) The rate at which data is transmitted from sender to receiver

c) The time taken for a packet to reach its destination

d) The amount of data that can be stored in a router's buffer

Answer: b) The rate at which data is transmitted from sender to receiver

27. What is a bottleneck link in a network path?

a) The link with the highest bandwidth

b) The link with the lowest reliability

c) The link that constrains the end-to-end throughput

d) The link with the highest propagation delay

Answer: c) The link that constrains the end-to-end throughput

28. Which of the following is NOT a common security threat in networks?

a) Packet sniffing

b) IP spoofing

c) Denial of Service (DoS) attacks

d) Packet acceleration

Answer: d) Packet acceleration

29. What is the purpose of a firewall in network security?

a) To encrypt all network traffic

b) To filter incoming and outgoing packets based on defined rules

c) To increase network bandwidth

d) To compress data for faster transmission

Answer: b) To filter incoming and outgoing packets based on defined rules

30. How many layers are in the Internet protocol stack?

a) 3

b) 4

c) 5

d) 7

Answer: c) 5

31. Which layer is responsible for routing datagrams from source to destination?

a) Application layer

b) Transport layer

c) Network layer

d) Link layer

Answer: c) Network layer

32. What is encapsulation in the context of network protocols?

a) The process of encrypting data for secure transmission

b) The addition of header information by each protocol layer

c) The compression of data to reduce transmission time

d) The fragmentation of large packets into smaller ones

Answer: b) The addition of header information by each protocol layer

33. Which of the following is NOT a principle of Cerf and Kahn's internetworking?

a) Minimalism

b) Autonomy

c) Best-effort service model

d) Centralized control

Answer: d) Centralized control

34. When was TCP/IP deployed?

a) 1969

b) 1974

c) 1983

d) 1991

Answer: c) 1983

35. What does HTML stand for?

a) Hypertext Markup Language

b) High-Level Text Management Language

c) Hyperlink and Text Manipulation Language

d) Host Transfer Markup Language

Answer: a) Hypertext Markup Language

36. When was the concept of software-defined networking (SDN) introduced?

a) 1990

b) 2000

c) 2008

d) 2015

Answer: c) 2008

37. What is the primary function of the transport layer in the Internet protocol stack?

a) Routing packets between networks

b) Providing process-to-process data transfer

c) Managing physical connections

d) Handling application-specific protocols

Answer: b) Providing process-to-process data transfer

38. Which of the following is NOT a characteristic of packet switching?

a) Resource sharing

b) Simplicity

c) Guaranteed performance

d) No call setup

Answer: c) Guaranteed performance

39. What is the purpose of the DNS in the Internet?

a) To encrypt data transmissions

b) To compress data for efficient transfer

c) To translate domain names to IP addresses

d) To manage network congestion

Answer: c) To translate domain names to IP addresses

40. Which layer of the OSI model is not present in the Internet protocol stack?

a) Physical layer

b) Network layer

c) Session layer

d) Application layer

Answer: c) Session layer