## Chapter 2 Application Layer

1. What is the main function of the Application Layer?

a) To manage physical connections

b) To provide services to end-user applications

c) To route data packets

d) To encrypt data

Answer: b

2. Which of the following is NOT an example of an application layer protocol?

a) HTTP

b) SMTP

c) DNS

d) TCP

Answer: d

3. What does SMTP stand for?

a) Simple Mail Transfer Protocol

b) Secure Message Transmission Protocol

c) System Mail Transfer Protocol

d) Standard Mail Transmission Protocol

Answer: a

4. Which protocol is used for retrieving email from a server?

a) SMTP

b) HTTP

c) IMAP

d) FTP

Answer: c

5. What is the purpose of DNS?

a) To encrypt web traffic

b) To compress data

c) To translate domain names to IP addresses

d) To route data packets

Answer: c

6. Which architecture does not have a dedicated server?

a) Client-server

b) Peer-to-peer

c) Centralized

d) Hierarchical

Answer: b

7. What is a socket in network programming?

a) A type of network cable

b) An interface between application and transport layers

c) A security protocol

d) A type of routing algorithm

Answer: b

8. Which transport layer protocol provides reliable, ordered delivery?

a) UDP

b) TCP

c) HTTP

d) FTP

Answer: b

9. What is the default port number for HTTP?

a) 21

b) 25

c) 80

d) 443

Answer: c

10. What does CDN stand for?

a) Content Delivery Network

b) Central Data Node

c) Compressed Data Network

d) Client Distribution Network

Answer: a

11. Which HTTP method is used to request a resource from a server?

a) POST

b) GET

c) PUT

d) DELETE

Answer: b

12. What is the purpose of a cookie in web applications?

a) To encrypt data

b) To compress files

c) To maintain state information

d) To route network traffic

Answer: c

13. Which protocol is used for secure web browsing?

a) HTTP

b) HTTPS

c) FTP

d) SMTP

Answer: b

14. What is the main advantage of peer-to-peer architecture?

a) Centralized control

b) Improved security

c) Scalability

d) Simplified management

Answer: c

15. Which of the following is NOT a type of DNS record?

a) A

b) MX

c) CNAME

d) HTTP

Answer: d

16. What is the purpose of DASH in video streaming?

a) To compress video files

b) To encrypt video data

c) To adapt video quality based on network conditions

d) To create video thumbnails

Answer: c

17. Which protocol is used for voice over IP applications?

a) HTTP

b) FTP

c) SIP

d) SMTP

Answer: c

18. What is the main function of a Web cache?

a) To store frequently accessed web pages

b) To encrypt web traffic

c) To compress web pages

d) To block malicious websites

Answer: a

19. Which of the following is an example of a peer-to-peer application?

a) Email

b) Web browsing

c) BitTorrent

d) DNS lookup

Answer: c

20. What is the purpose of the "If-Modified-Since" header in HTTP?

a) To specify the client's preferred language

b) To request only updated content since a specific date

c) To set an expiration date for the response

d) To indicate the size of the requested resource

Answer: b

21. Which transport layer protocol does DNS primarily use?

a) TCP

b) UDP

c) HTTP

d) SMTP

Answer: b

22. What is the main purpose of a manifest file in DASH?

a) To list available video qualities

b) To compress video data

c) To encrypt video streams

d) To store user preferences

Answer: a

23. Which of the following is NOT a challenge in video streaming?

a) Variable network conditions

b) Heterogeneous client devices

c) Large file sizes

d) Limited color depth

Answer: d

24. What is the purpose of the MX record in DNS?

a) To specify the IP address of a domain

b) To define mail server for a domain

c) To create an alias for a domain name

d) To set the authoritative name server

Answer: b

25. Which protocol is used for secure email transmission?

a) SMTP

b) POP3

c) IMAP

d) SMTPS

Answer: d

26. What is the main advantage of using a CDN?

a) Reduced latency for geographically distributed users

b) Increased security of content

c) Lower bandwidth costs for content providers

d) Simplified content management

Answer: a

27. Which of the following is NOT a method of addressing processes in network communication?

a) IP address

b) Port number

c) MAC address

d) Socket

Answer: c

28. What is the purpose of the HTTP HEAD method?

a) To retrieve the headers of a resource without the body

b) To send data to the server

c) To delete a resource on the server

d) To update an existing resource

Answer: a

29. Which layer of the OSI model does the Application Layer correspond to?

a) Layer 5

b) Layer 6

c) Layer 7

d) Layer 4

Answer: c

30. What is the main difference between TCP and UDP?

a) TCP is connectionless, UDP is connection-oriented

b) TCP provides reliable delivery, UDP does not

c) TCP is faster than UDP

d) UDP supports flow control, TCP does not

Answer: b

31. What is the purpose of the TTL field in DNS records?

a) To specify the maximum number of hops for a packet

b) To indicate how long the record should be cached

c) To set the priority of the record

d) To encrypt the record data

Answer: b

32. Which of the following is NOT a benefit of persistent HTTP connections?

a) Reduced latency for subsequent requests

b) Lower CPU and memory usage on servers

c) Ability to pipeline requests

d) Increased security

Answer: d

33. What is the main purpose of the MIME type in HTTP headers?

a) To specify the encoding of the content

b) To indicate the type of content being transferred

c) To set the compression method for the content

d) To define the caching policy for the content

Answer: b

34. Which protocol is used for transferring files between a client and server?

a) HTTP

b) SMTP

c) FTP

d) DNS

Answer: c

35. What is the purpose of the "Accept" header in HTTP requests?

a) To specify the types of content the client can process

b) To indicate the preferred language for the response

c) To set the maximum size of the response

d) To define the authentication method

Answer: a

36. Which of the following is NOT a type of web caching?

a) Browser caching

b) Proxy caching

c) CDN caching

d) DNS caching

Answer: d

37. What is the main advantage of using UDP for DNS queries?

a) Guaranteed delivery of packets

b) Lower latency

c) Better congestion control

d) Improved security

Answer: b

38. Which protocol is used for real-time video conferencing?

a) HTTP

b) FTP

c) RTP

d) SMTP

Answer: c

39. What is the purpose of the "Origin" header in HTTP requests?

a) To indicate the IP address of the client

b) To specify the domain that initiated the request

c) To set the preferred language for the response

d) To define the caching policy for the response

Answer: b

40. Which of the following is NOT a method of improving web performance?

a) Content compression

b) Minification of resources

c) Use of CDNs

d) Increasing the number of HTTP requests

Answer: d