

FOR MULTIPLE-CHOICE QUESTIONS, CHOOSE THE BEST SINGLE ANSWER.

1. ____ "IP Fragmentation" refers to:
 - a. Failure of the IP routing algorithms under high load conditions,
 - b. Encapsulation of IP packets for multi-protocol networks,
 - c. Breaking up IP packets in-route,
 - d. Setting IP packet parameters at the destination.
2. ____ ATM uses:
 - a. datagrams,
 - b. virtual circuits,
 - c. both,
 - d. neither.
3. The minimum size of the IPv4 header is ____ bytes.
4. The width of the IPv4 Class C network number field is ____ bits.
5. An application sends a 100-byte message using TCP/IP over a 10BaseT Ethernet. The Ethernet packet is ____ bytes long (assume no TCP or IP options are used).
6. An IPv4 Class A address has a host ID field that is ____ bits wide.
7. ____ ARP is used for:
 - a. Translating IP addresses into TCP addresses,
 - b. Translating MAC addresses into TCP addresses,
 - c. Translating MAC addresses into 802.x addresses,
 - d. Translating IP addresses into MAC addresses.
8. An IP tunnel:
 - a. is a virtual point-to-point link,
 - b. is prohibited from use under IPsec,
 - c. is a technique for encrypting messages,
 - d. uses a special IP header field.
9. If a host running ARP receives a packet with an address that is not in its ARP translation table, it will:
 - a. notify the ARP server,
 - b. broadcast the packet to all nodes on the subnetwork,
 - c. send the packet to the most likely destination using the "next-hop",
 - d. broadcast an ARP query to all nodes on the subnetwork.
10. ____ "Classful" addressing is widely thought to:
 - a. lead to increased complexity in backbone routers,
 - b. be appropriate only when the subnets involved are physically near each other,
 - c. make inefficient use of the address space,
 - d. all the above.

11. A Class C network uses a 6-bit subnet number. Each subnet can contain up to ____ hosts
12. IPv4 addresses are ____ bytes long.
13. The IPv4 address of a host is 128.96.34.139 and its subnet mask is 255.255.255.128. The host's subnet number is _____.
14. ____ "CIDR" stands for:
- a. Classful Inter-Domain Routing,
 - b. Classful Inter-Domain Registration,
 - c. Classless Inter-Domain Registration,
 - d. Classless Inter-Domain Routing.
15. ____ CIDR requires that the address spaces to be combined are:
- a. orthogonal,
 - b. mutually-exclusive,
 - c. contiguous,
 - d. subnetted
16. CIDR addressing uses the _____ principle to resolve partially-matching addresses.
17. The primary motivation for the development of IPv6 was _____.
18. IPv6 uses ____-bit addresses.
19. ATM cells are ____ bytes long.
20. ____ ATM uses a small cell because:
- a. hardware designs can be optimized,
 - b. queues operate more efficiently,
 - c. the US wanted small cells, the rest of the world wanted large cells,
 - d. all the above.
21. ____ When a Public Key system is used for encryption,:
- a. the encryption key is secret, the decryption key is public.
 - b. the encryption key is public, the decryption key is secret.
 - c. both keys are public.
 - d. both keys are secret.
22. ____ "MTU" is:
- a. "Mean Traffic Utilization",
 - b. 1500 bytes for 10BaseT,
 - c. a problem that arises in CIDR,
 - d. the key difference between DES and RSA.
23. ____ An ATM AAL may produce:
- a. a SAR PDU,
 - b. a CS PDU,
 - c. both,
 - d. either one, but not both.

24. The IPv4 address 42.41.6.20 is a Class ____ address.
25. ____ The Sliding Window Algorithm used by TCP has been modified to provide improved flow control through the use of:
- a. dynamic window sizes,
 - b. large segment numbers,
 - c. adaptive timeouts
 - d. estimated RTTs.
26. ____ In the Internet, we must allow for a TCP segment to be as late as:
- a. $2 \times \text{RTT}$,
 - b. the Advertised Window Size
 - c. the IP Time To Live value
 - d. the TCP Time To Live value
27. ____ "TCP" stands for:
- a. Transfer Control Protocol
 - b. Transfer Connection Protocol
 - c. Transmission Communication Protocol
 - d. Transmission Control Protocol
28. The Hex IPv4 address "C4 5F 02 A0" is _____ in "dotted-decimal" notation.
29. ____ A major difference between TCP and UDP is that:
- a. TCP is reliable, UDP is unreliable,
 - b. TCP is connection-oriented, UDP is datagram-oriented.
 - c. Both
 - d. Neither
30. ____ UDP is sometimes called:
- a. "TCP with sockets"
 - b. "IP with ports"
 - c. "IP with sockets"
 - d. "TCP with ports"
31. ____ An authentication Server must have:
- a. the secret key for every possible client
 - b. the secret key for every other Authentication Server
 - c. a public key
 - d. all of these
32. ____ A 1 Mbps link has a one-way latency of 20 mSec. The magnitude of the link's Delay x Bandwidth product is:
- a. 200
 - b. 5
 - c. 400
 - d. 2000

33. ____ Of the following, which one is the first thing to investigate when you want to improve network performance?
- a. Link bandwidth
 - b. Congestion recovery
 - c. Shorter timeouts
 - d. Software overhead
34. ____ DES is:
- a. a "mechanical" algorithm
 - b. a secret key algorithm
 - c. both
 - d. neither
35. ____ RSA is:
- a. a "mechanical" algorithm
 - b. a secret key algorithm
 - c. both
 - d. neither
36. ____ If the "Don't Fragment" bit is set in an IP header, the packet most likely:
- a. will have to be specially routed,
 - b. contains an error,
 - c. is a fragment of a larger message,
 - d. also has the "No More Fragments" bit set.
37. ____ RSA is difficult to break in general due to the difficulty of:
- a. multiplying extremely large primes,
 - b. determining a number from its modulus
 - c. reversing fully-random shuffles
 - d. factoring large primes
38. ____ Two authentication methods that we discussed are:
- a. secret key and IPSec
 - b. third party and man-in-the-middle
 - c. 3-way handshake and session key
 - d. 3-way handshake and third party
39. ____ ATM uses a fixed-size cell because:
- a. hardware designs can be optimized,
 - b. queues operate more efficiently,
 - c. the US wanted fixed cells, the rest of the world wanted variable cells,
 - d. all the above.
40. ____ Diffie-Hellman is a method for:
- a. public-key encryption
 - b. generating electronic signatures
 - c. establishing secret keys
 - d. generating large primes.

41. ____ A filtering firewall provides:
- a. strong security
 - b. weak security
 - c. an easy way to distribute public keys
 - d. automatic Certification Authority support
42. In Classful addressing, a 256-node subnetwork requires a Class ____ address.
43. ____ Subnet masks must be known by routers:
- a. inside the subnet, but not outside it
 - b. outside the subnet, but not inside it
 - c. both inside and outside the subnet
 - d. inside the subnet and other subnets located nearby.
44. Network-layer protocols deliver information host-to-host, while transport-level protocols deliver information ____-to-____.
45. ____ As networks become faster, TCP has a increasing need for:
- a. larger sequence numbers
 - b. a new method for sending Advertised Window Size
 - c. a larger destination port ID field
 - d. advanced buffer management strategies such as RED
46. ____ The TCP "Advertised Window Size" is based on:
- a. space remaining in the TCP send buffer
 - b. number of segments timed-out
 - c. number of out-of-order segments
 - d. space remaining in the receive buffer
47. ____ UDP stands for:
- a. User Data Protocol
 - b. User Datagram Protocol
 - c. Unreliable Data Protocol
 - d. Unreliable Datagram Protocol
48. ____ To support Internet telephone traffic, you would most likely use:
- a. TCP
 - b. UDP
 - c. UDP for setup, TCP for data
49. ____ Common reasons for major network performance problems include:
- a. Structural problems
 - b. Synchronous Overload
 - c. Both
 - d. Neither
50. ____ In this class, the term "ESP" refers to:
- a. an SWA flow-control method
 - b. an authentication method
 - c. a virtual-circuit setup method
 - d. a Network-layer security method