Part I.單選題（每題 2%, 請在答案卡上作答）

1. Which of the following is an Ethernet MAC address?
   (A) F5-32-A0-DF-88-6H (B) 0B-4A-90-MN-F5-12 (C) 2H-FM-00-85-33-HF (D) EA-EE-F2-29-CF-BB (E) 46-FI-24-58-90-EE
2. Which of the following is an IPv4 address?
   (A) 140.112.42.259 (B) 140.112.42.258 (C) 140.112.42.257 (D) 140.112.42.256 (E) 140.112.42.255
3. Which layer protocol is DHCP?
   (A) Application (B) Transport (C) Network (D) Link (E) Physical
4. Which layer protocol is DNS?
   (A) Application (B) Transport (C) Network (D) Link (E) Physical
5. Which layer protocol is Manchester encoding used?
   (A) Application (B) Transport (C) Network (D) Link (E) Physical
6. Which layer protocol is Internet Checksum used?
   (A) Application (B) Transport (C) Network (D) Link (E) Physical
7. Which of the following differs Aloha and Slotted Aloha?
   (A) Clock synchronization (B) Random access (C) Collision (D) Carrier sense (E) Acknowledgement packet
8. Which of the following differs CSMA/CD and CSMA/CA?
   (A) Clock synchronization (B) Random access (C) Collision (D) Carrier sense (E) Acknowledgement packet
9. Which of the protocol supports email server hostname resolution?
   (A) DNS (B) NAT (C) ARP (D) Mobile IP (E) None of the above
10. Which of the protocol supports home-to-foreign network relay?
    (A) DNS (B) NAT (C) ARP (D) Mobile IP (E) None of the above
11. Which of the protocol supports global-to-local address look up?
    (A) DNS (B) NAT (C) ARP (D) Mobile IP (E) None of the above
12. Which of the protocol supports IP-to-MAC address resolution?
    (A) DNS (B) NAT (C) ARP (D) Mobile IP (E) None of the above
13. Which of the following is known to have the count-to-infinity problem?
    (A) RIP (B) OSPF (C) BGP (D) MOSPF (E) DVMRP
14. Which of the following is known to have the path-oscillation problem?
    (A) RIP (B) OSPF (C) BGP (D) MOSPF (E) DVMRP
15. Which of the following is known to have the hot-potato-routing characteristic?
    (A) RIP (B) OSPF (C) BGP (D) MOSPF (E) DVMRP
16. Which of the following is known to have the flood-and-prune characteristic?
    (A) RIP (B) OSPF (C) BGP (D) MOSPF (E) DVMRP
17. Which of the following is known to generate the distance vectors?
    (A) RIP (B) OSPF (C) BGP (D) MOSPF (E) DVMRP
18. Which of the following is known to generate the path vectors?
    (A) RIP (B) OSPF (C) BGP (D) MOSPF (E) DVMRP
19. Which of the following is known to generate the shortest path tree?
    (A) RIP (B) OSPF (C) BGP (D) MOSPF (E) DVMRP
20. Which of the following is known to generate the reversed shortest path tree?
    (A) RIP (B) OSPF (C) BGP (D) MOSPF (E) DVMRP

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21. Provided a forwarding table of 5 {prefix, interface} entries as follows:
    {11001010 10001000 0011, 1}
    {11001010 10001000 001100, 2}
    {11001010 10001000 00110, 3}
    {11001010 10001000 0010, 4}
    {default, 5}
    Which interface will the packet go next with the destination address being 11001010 10001000 00100000 10101010?
    (A) 1 (B) 2 (C) 3 (D) 4 (E) 5
22. Use the same forwarding table in the question above (#23). Which interface will the packet go next with the destination address being 11001010 10001000 00110000 10101010?
    (A) 1 (B) 2 (C) 3 (D) 4 (E) 5
23. Use the same forwarding table in question #23. Which interface will the packet go next with the destination address being 11001010 10001000 00111000 10101010?
    (A) 1 (B) 2 (C) 3 (D) 4 (E) 5
24. Use the same forwarding table in question #23. Which interface will the packet go next with the destination address being 11001010 10001000 00110111 10101010?
    (A) 1 (B) 2 (C) 3 (D) 4 (E) 5
25. Suppose a TCP connection is in the slow start state and the current window size is cwnd. What is the new window size when the sender receives a cwnd of acknowledgement packets?
    (A) cwnd+1 (B) 2cwnd (C) 1 (D) cwnd+1/cwnd (E) cwnd/2
26. Suppose a TCP connection is in the congestion avoidance state and the current window size is cwnd. What is the new window size when the sender receives a cwnd of acknowledgement packets?
    (A) cwnd+1 (B) 2cwnd (C) 1 (D) cwnd+1/cwnd (E) cwnd/2
27. Suppose the current window size of TCP is cwnd. What is the new slow start threshold when the TIMEOUT timer expires?
    (A) cwnd+1 (B) 2cwnd (C) 1 (D) cwnd+1/cwnd (E) cwnd/2
28. Suppose the current window size of TCP is cwnd. What is the new slow start threshold when the 3 duplicate acknowledgement packets are received?
    (A) cwnd+1 (B) 2cwnd (C) 1 (D) cwnd+1/cwnd (E) cwnd/2
29. What does status code 404 mean in HTTP response messages?
    (A) OK (B) Moved Permanently (C) Bad Request (D) Not Found (E) HTTP Version Not Supported
30. Which of the following is not the benefit of using persistent HTTP connections?
    (A) Shorter page download time (B) Less HTTP requests (C) Fewer TCP connections (D) Lower traffic volume (E) None of the above

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Part II. 複選題（每題 4%, 請在答案卡上作答）

31. Which of the followings could be the functions of an application layer protocol?
    (A) Reliable transfer (B) Forwarding (C) Error detection (D) Routing (E) Medium Access
32. Which of the followings could be the functions of a transport layer protocol?
    (A) Reliable transfer (B) Forwarding (C) Error detection (D) Routing (E) Medium Access
33. Which of the followings could be the functions of a network layer protocol?
    (A) Reliable transfer (B) Forwarding (C) Error detection (D) Routing (E) Medium Access
34. Which of the followings are functions of a link layer protocol?
    (A) Reliable transfer (B) Forwarding (C) Error detection (D) Routing (E) Medium Access
35. Which of the followings may cause a packet retransmission in TCP?
    (A) Bit error (B) Packet drop (C) Packet reordering (D) Packet delay (E) Disconnection
36. Which of the followings may cause a congestion window size decrease in TCP?
    (A) Bit error (B) Packet drop (C) Packet reordering (D) Packet delay (E) Disconnection
37. Which of the following schemes are error detection scheme?
    (A) Internet Checksum (B) 1-Dimensional Parity Bit (C) 2-Dimensional Parity Bit (D) CRC (E) CDMA
38. Which of the following schemes are error correction scheme?
    (A) Internet Checksum (B) 1-Dimensional Parity Bit (C) 2-Dimensional Parity Bit (D) CRC (E) CDMA
39. Which of the following fields are in the IPv4 packet header?
    (A) Source IP address (B) Destination IP address (C) Internet checksum (D) Version number (E) Payload length
40. Which of the following fields are in the IPv6 packet header?
    (A) Source IP address (B) Destination IP address (C) Internet checksum (D) Version number (E) Payload length

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