

※ 注意：請用 2B 鉛筆作答於答案卡，並先詳閱答案卡上之「畫記說明」。

多重選擇題(每題 10 分,所有選項全對才給分, 每題可能有一個或多個選項是對的)

1. Which of the following descriptions are true?
 - (A) Random early detection (RED, also known as random early discard or random early drop) is an active queue management algorithm that could enhance TCP performance.
 - (B) TCP is a closed-loop flow control protocol
 - (C) TCP uses contention window for contention resolution in medium access
 - (D) Negative acknowledgement is used to trigger TCP retransmission
 - (E) None of the above

2. Which of the following descriptions are true?
 - (A) Telephony network does not need routing protocol
 - (B) Link state routing distributes local link information to the whole network
 - (C) Route oscillation can be caused if the routing protocol chooses paths based on the current traffic load
 - (D) Hop-count is an excellent routing metric in a homogeneous network with uniformly distributed load
 - (E) None of the above

3. Which of the following descriptions are true?
 - (A) With nonpersistent CSMA, a source that senses that the medium is busy waits for a random time and tries again.
 - (B) With p-persistent CSMA, a source continuously senses a busy medium till it becomes idle, then sends a packet with probability p.
 - (C) CSMA/CD is widely used in wireless local area network (e.g. 802.11).
 - (D) RTS and CTS mechanism could be used to resolve hidden terminal problem.
 - (E) None of the above

4. When you connect to 批踢踢實業坊 BBS (telnet://ptt.cc), which of the following networking protocols are used?
 - (A) ptt
 - (B) telnet
 - (C) DNS
 - (D) IP
 - (E) None of the above

5. Which of the following descriptions are true?
 - (A) An HTTP server usually listens on the port (e.g. port 80) and waits for a client's request message to initiate an HTTP session.
 - (B) HTTP is an application layer protocol
 - (C) TCP connection needs to be established before establishing a HTTP session
 - (D) An HTTP client will initiates an HTTP session after the server sends a session request message
 - (E) None of the above

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6. Which of the following descriptions are true?
- (A) ARP is used to map IP address to MAC address
 - (B) We will look up IP routing table without using ARP table when sending an IP packet to another subnet.
 - (C) Autonomous systems are deployed to resolve the scalability problem for network routing.
 - (D) Classless Interdomain Routing could enhance the IP address allocation efficiency.
 - (E) None of the above
7. What are included in an IPv4 datagram?
- (A) 32-bit Source IP address
 - (B) Datagram length
 - (C) Time-to-live
 - (D) Header length
 - (E) None of the above
8. Which of the following descriptions are true?
- (A) With agent advertisement mechanism, a home agent advertises its services to mobile nodes
 - (B) Care-of-address is used to uniquely identify a mobile node
 - (C) Network security is enhanced with packet encapsulation in Mobile IP
 - (D) In Mobile IP, data packets are forwarded from home agent to COA. This results in indirect forwarding
 - (E) None of the above
9. What is the achievable peak throughput by a source node applying stop-and-wait flow control when the maximum packet size is 1000 bytes? Assume the network link is a 10km fiber-optic line? (Assume the speed of light in fiber is $0.7c$, where c is the speed of light in vacuum = 3×10^8 m/s)
- (A) The round-trip-delay is $95.2\mu\text{s}$
 - (B) The round-trip-delay is $125\mu\text{s}$
 - (C) The maximum possible throughput is 84.03 Mbps
 - (D) The maximum possible throughput is 80 Mbps
 - (E) None of the above
10. In a network system, packets need to be uniquely identified with sequence number. The source sends data packets to the destination nodes. Then the destination node sends ACK. The maximum segment lifetime (also known as maximum packet lifetime) is 200ms. The maximum segment lifetime of a packet is applicable to both data packets and ACK packets. The maximum time a sender waiting for an ACK persists in retransmitting a packet is 100ms. The maximum time a receiver can hold a packet before sending an ACK is 50ms. The source transmitting rate is 2Mbps. The data packet size is 50 bytes. To avoid confusion, what is the minimal required sequence number size?
- (A) 10 bit
 - (B) 11 bit
 - (C) 12 bit
 - (D) 13 bit
 - (E) None of the above