

博班資格考 資訊網路試題

命題方式: close book

考試時間: 共 4 小時

第一部分 :

1. a) List the major network management functions. (4%)
b) List the main elements in a network management system. (4%)
c) What are the two basic types of SNMP commands? (2%)
2. a) How is IPv6 better than IPv4? (2%)
b) Compare TCP and UDP. (4%)
c) A host sends a TCP segment with source port number 25 and destination port number 17892. Is the host a server or a client? (2%)
d) What are Layer 4 switches? (2%)
3. a) What is 2.5G service? (2%)
b) Explain why Ethernet is attractive for WANs. (3%)
c) For what type of WAN is Ethernet likely to be attractive? (2%)
d) What is a VPN(virtual private network)? (2%)
4. a) What are the advantages and disadvantages of wireless LANs? (4%)
b) Why can't wireless networking use CSMA/CD? (2%)
c) Why is CSMA/CD+ACK inefficient? (2%)
d) What are the advantages of 802.11 over Bluetooth? (2%)
e) What are the advantages of Bluetooth over 802.11? (2%)
5. a) What are the benefits of standards? (2%)
b) What is the purpose of the transport layer? (2%)
c) What type of connecting device is a Layer 1 device? (2%)
d) Describe the functions of the top three OSI layers. (3%)

第二部分 :

1. In what way does a message digest provide a better message integrity check than a checksum such as the Internet checksum? 5%

2. Compare RTSP with HTTP.
 - a. How is RTSP similar to HTTP? Does RTSP have methods? Can HTTP be used to request a stream? 5%
 - b. How is RTSP different from HTTP? For example, is HTTP in-band or out-of-band? Does RTSP maintain state information about the client? 5%
3. Consider a 100 Mbps 100BaseT Ethernet. In order to have an efficiency of 0.5, what should be the maximum distance between a node and the hub? Assume a frame length of 64 bytes and that there are no repeaters. Does this maximum distance also ensure that a transmitting node A will be able to detect whether any other node transmitted while A was transmitting? Why or why not? 10%
4. Compare and contrast link state and distance vector routing algorithms. 5%
5. What is the size of the multicast address space? Suppose now that two multicast groups randomly choose a multicast address. What is the probability that they choose the same address? Suppose now that 1,000 multicast groups are ongoing at the same time and choose their multicast group addresses at random. What is the probability that they interfere with each other? 5%
6. Consider transferring an enormous file of L bytes from Host A to Host B. Assume an MSS of 1,460 bytes.
 - a. What is the maximum value of L such that TCP sequence numbers are not exhausted? 5%
 - b. For the L you obtain in (a), find how long it takes to transmit the file. Assume that a total 66 bytes of transport, network, and data-link header are added to each segment before the resulting packet is sent out over a 10 Mbps link. Ignore flow control and congestion control so A can pump out the segments back to back and continuously. 5%
7. Why do HTTP, FTP, SMTP, POP3, and IMAP run on top of TCP rather than on UDP? 5%