

招生學年度	九十九	招生類別	碩士班
系所班別	資訊工程學系網路與多媒體科技碩士班		
科目	計算機網路		
注意事項	本考科禁止使用掌上型計算機		

1. (10%) Discuss the advantages and disadvantages of these two medium access methods: random access and controlled access.

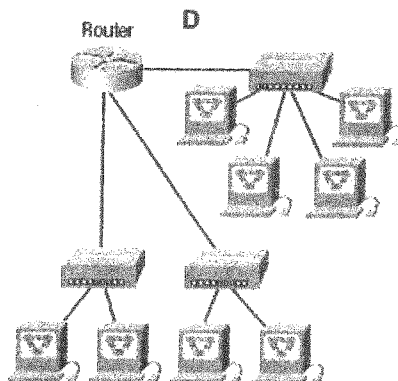
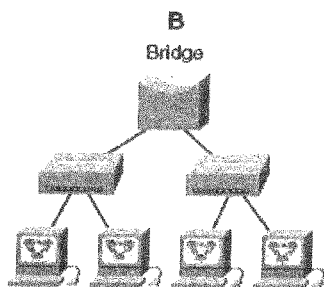
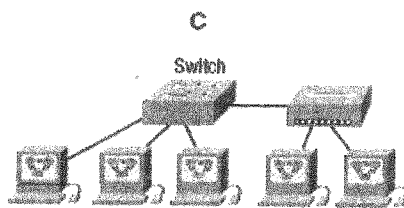
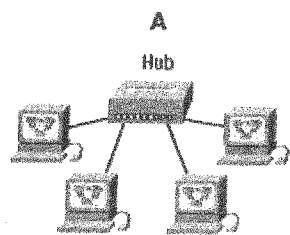
2. (10%) We measure the performance of a telephone line (8 kHz of bandwidth) when the signal-to-noise ratio is 7 dB. What is the maximum data rate supported by this telephone line? If the modulation 16-QAM is used, what is the baud rate?

3. (10%) Match the following to one of the seven OSI layers:

- (a) reliable end-to-end data transmission
- (b) network selection
- (c) frames defined
- (d) user services such as email and file transfer provided
- (e) transmission of bit stream across physical medium

4. (8%) In the following network architecture, identify the number of collision domains and broadcast domains in each specified device. Each device is represented by a letter:

- (a) Hub
- (b) Bridge
- (c) Switch
- (d) Router



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5. (12%) Discuss the advantages and disadvantages of using these three switching techniques: circuit switching, datagram packet switching, and virtual circuit packet switching.

6. (8%) Suppose the link speed is 2.048Mbps, the data rate of each user is 128Kbps, and the active factor of each user is 10%. What is the service amount of the circuit-switching network? What is the service amount of the packet switching network with the probability of 10 users active less than 1%?

7. (12%) In transport layer, what is Selective Repeat? What are the differences between Go-Back-N and Selective Repeat?

8. (8%) What components are there contributing to packet delay?

9. (12%) How do TCP flow control and congestion control work?

10. (10%) Explain why CSMA/CD cannot work in wireless environments. How can you solve it?