

# Grade Book Detail

## Exercise 1 (Chap 1)

Started: September 21, 2019, 4:40 pm

Last change: September 23, 2019, 6:52 pm

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ch1-18 Which of the OSI layers handles each of the following:

(a) Dividing the transmitted bit stream into frames. Data Link Layer

(b) Determining which route through the subnet to use. Network Layer

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Question 1: 10 (parts: 5, 5) out of 10 in 5 attempt(s)

**Q.** A system has an 7-layer protocol hierarchy. Applications generate messages of length 1000 bytes. At each of the layers, an 20 byte header is added. What fraction of the network bandwidth is filled with headers?

**A.** 12 % (round to integer)

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Question 2: 10 out of 10 in 5 attempt(s)

**Q.** How long was a bit on the original 802.3 standard in meters? Use a transmission speed of 10 Mbps and assume the propagation speed in coax is  $\frac{2}{3}$  the speed of light in vacuum.

**A.** 20 meters.

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Question 3: 10 out of 10 in 5 attempt(s)

**Q.** A client-server system uses a satellite network, with the satellite at a height of 40000 km. What is the best-case delay in response to a request?

**A.** 533 msec

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Question 4: 10 out of 10 in 5 attempt(s)

**Q.** An image is 1024 x 768 pixels with 3 bytes/pixel. Assume the image is uncompressed. How long does it take to transmit it over a 56-kbps modem channel? Over a 1-Mbps cable modem? Over a 10-Mbps Ethernet? Over 100-Mbps Ethernet? (round to three decimal

place)

**A. for 56kbps:** 337.042 sec  
**A. for 1Mbps:** 18.874 sec  
**A. for 10Mbps:** 1.887 sec  
**A. for 100Mbps:** 0.189 sec

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Question 5: 10 (parts: 2.5, 2.5, 2.5, 2.5) out of 10 in 5 attempt(s)

**Q.** A collection of five routers is to be connected in a point-to-point subnet. Between each pair of routers, the designers may put a high-speed line, a medium-speed line, a low-speed line, or no line. If it takes 100 ms of computer time to generate and inspect each topology, how long will it take to inspect all of them? (give your answer as xxx.xx)

**A.** 104856.6 seconds

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Question 6: 10 out of 10 in 5 attempt(s)

Which of the following description about OSI layers is incorrect?

- ☐ The physical layer is concerned with transmitting raw bits over a communication channel
- ☒ The data link layer is a true **end-to-end** layer, all the way from the source to the destination  
端到端
- ☐ The network layer controls the operation of the subnet and determines how packets are routed from source to destination
- ☐ The application layer contains a variety of protocols that are commonly needed by users

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Question 7: 10 out of 10 in 5 attempt(s)

Which service model is connection-oriented service?

- ☒ virtual circuit service
- ☐ acknowledged **datagram service**
- ☐ client-server service 数据报
- ☐ datagram service

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Question 8: 10 out of 10 in 5 attempt(s)

What is the name of PDU at the network layer of the OSI reference model?

- ☐ message
- ☐ frame
- ☒ packet
- ☐ segment

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Question 9: 10 out of 10 in 5 attempt(s)

Some network systems support transmission to a subset of the machines. This mode of operation is called:

- ☐ flow control
- ☐ congestion control
- ☒ multicasting
- ☐ broadcasting

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Question 10: 10 out of 10 in 5 attempt(s)

Total: 100/100

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