软 件 学 院 **2008** 级 软 件 工 程 专 业 (20010 学年春季学期)

《SE-301 计算机网络》 期末考试试卷(B)

(考 试 形 式 ： 闭 卷　　考 试 时 间 ： 2 小 时)

警 示

《中山大学授予学士学位工作细则》第六条

考 试 作 弊 不 授 予 学 士 学 位

方向：_____　姓名：_____　学号：_____成绩：_____

注意：答案一定要写在答卷中，写在本试题卷中不给分。本试卷要和答卷一起交回。

答卷指南：

1） 考题共 8 题。

2） 可选中文或者英文来答卷。

1） (10points) Compute the CRC for a given message (M) and a generator polynomial (P). M is 0111101 and P is 1011.

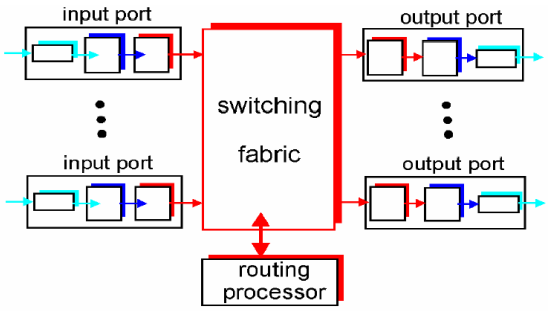
2） (10points) CSMA/CA

a) What is CSMA/CA?

b) Why WIFI(802.11) uses CSMA/CA?

c) How CSMA/CA works?

3） (10points) Where (input ports and/or output ports) can packet queuing occur in a router? Briefly explain the conditions that lead to such queuing.



4） (10 points) Explain how a link-state routing algorithm (such as OSPF) works. If proper forwarding table is generated, please give answers to the following questions.

A router has the following (CIDR) entries in its routing table:

Address/mask	Next hop

Address/mask	Next hop
135.46.56.0/22	Interface 0
135.46.60.0/22	Interface 1
192.53.40.0/23	Router 1
default	Router 2

For each of the following IP addresses, what does the router do if a packet with that address arrives?

(a) 135.46.63.10

(b) 135.46.57.14

(c) 135.46.52.2

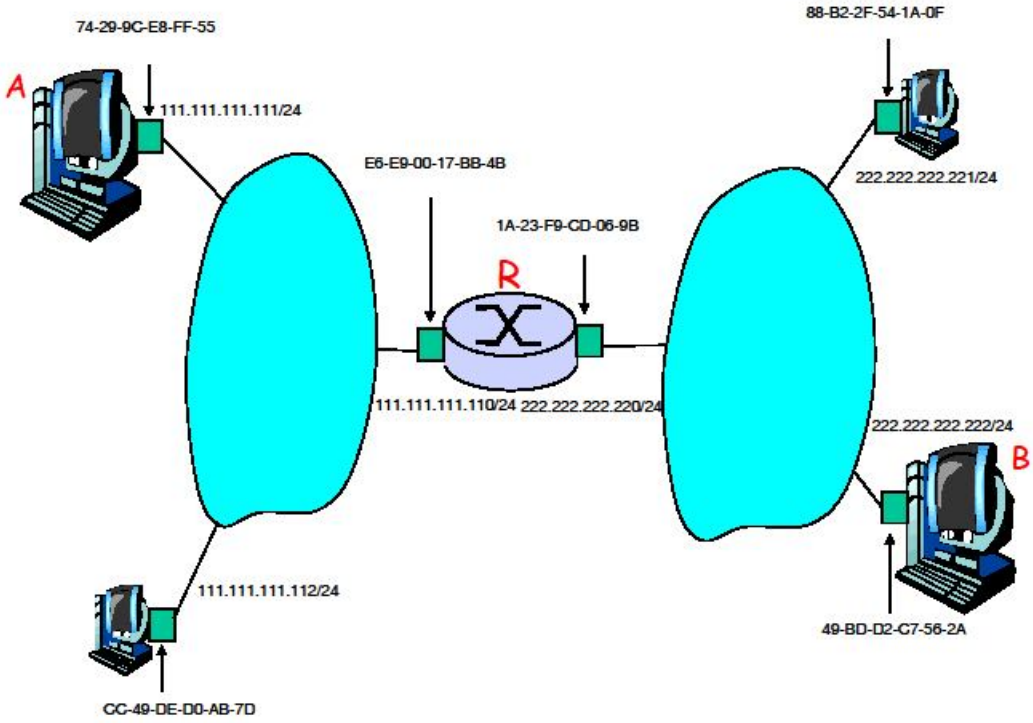
(d) 192.53.40.7

(e) 192.53.56.7

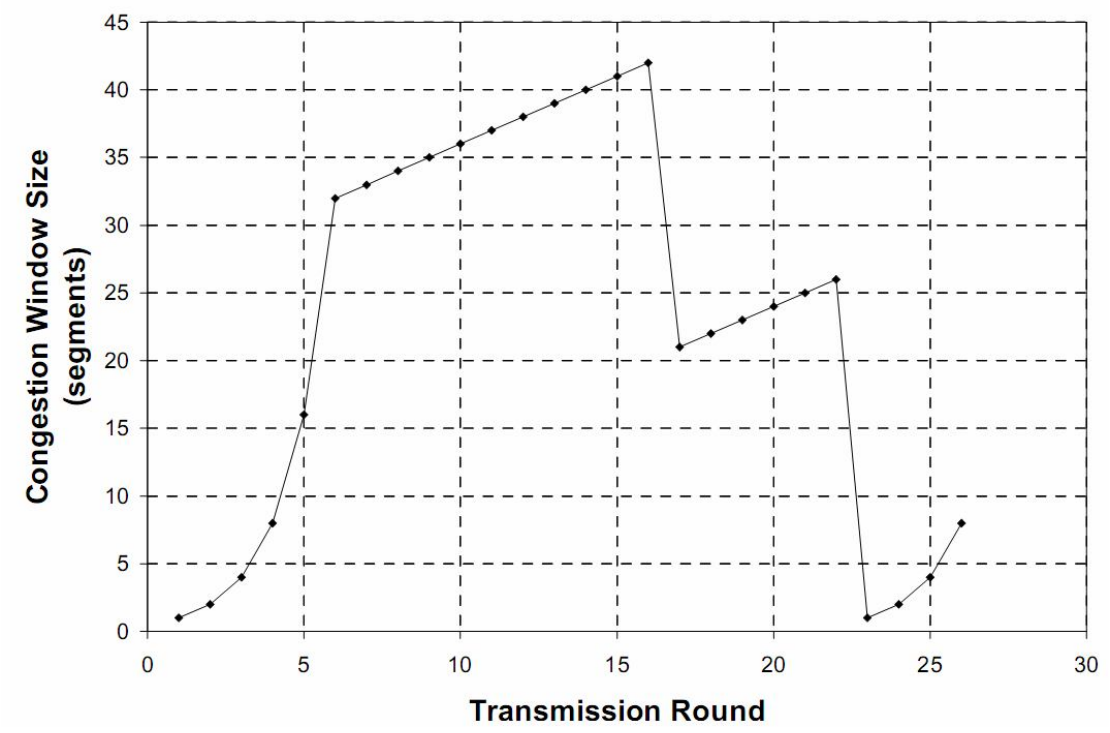
5） (15points) Consider a 4-layer protocol implementation with application, TCP, IP, and Ethernet layers in that order (top to bottom). Each layer requires a header except the Ethernet layer, which requires a header and trailer. The application header is 16 bytes in length, TCP header 20 bytes, IP header 20 bytes, and let the Ethernet header be 14 bytes, and the trailer 4 bytes (ignore the preamble and gap). Answer the following questions:

a) Sketch a packet for this system carefully showing and labeling all fields.
b) Assume a maximum data field for an Ethernet frame of 1500 bytes. What is the overhead (in %) for a 4096-byte application message? Hint: the message must be segmented into multiple frames and be careful of how you consider the data field in the Ethernet frame.

6） (15 points) Please refer to the following figure. Assume proper routing entries have been generated by related hosts or routers. If host A want to send 3 UDP packets to B, please describe on each host or router, from transport layer to data link layer, how the three packets are delivered to host B.



7） (15points) Consider the following plot of TCP window size as a function of time:



Assuming TCP Reno is the protocol experiencing the behavior shown above, answer the following questions.

(a) What is the value of **threshold** at the 18 transmission round**?**

(b) Identify the intervals of time when TCP congestion avoidance is operating(AIMD)

(c) During what transmission round is the 70^{th} segment sent?

8） (15 points) I have machine connected to network and the Internet Explorer is open. If I enter the following address in the address field and press enter.

www.yahoo.com

Please explain from the direct connect router's (router that my machine directly connected to) perspective, what kind of operation (from application layer, if exist, down to data link layer), the router must do to get the webpage to display.