C 47641 (Pages 3)

Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2008

CS/IT 04 603—COMPUTER NETWORKS

(2004 admissions)

Time : Three Hours Maximum : 100 Marks

I. (a) Why should there be fewer collisions on a switched Ethernet network compared to a traditional Ethernet ? Compare the data transmission rates for traditional Ethernet, Fast Ethernet and cigabit Ethernet.

(b) Which is more efficient, circuit switching or virtual circuit switching ? Why ? How is blocking related to a cross bar switch ?

(c) What are the four categories of messages in the network layer ? What is a reference point ?

(d) Compare the SONET layers to the layers of the OSI model. Discuss the location of overhead information for each SONET layer.

(e) What is the difference between a simple bridge and a transparent (learning) bridge ? What is the function of a router ?

(f) Compare the sliding window protocol in the data link layer versus that in the transport layer. What are the three phases a connection-oriented transport service goes through ?

(g) What are the physical and data link layer protocols of the TCP/IP protocol suite ? What are the data packets at each ICP/IP protocol suite layer called ?

(h) How are HTTP and the www related to the Internet ? Compare and contrast the three types of www documents ?

(8 × 5 = 40 marks)

II. (a) (i) What is the smallest size of an Ethernet frame ? What is the largest size of an Ethernet frame ?

(4 marks)

(ii) What is the smallest size of a Token Ring data frame ? What is the largest size of a Token Ring data frame ?

(4 marks)

(iii) What is the ratio of useful data to the entire packet for the smallest Token Ring frame ? What is the ratio for the largest frame ? What is the average ratio ?

(7 marks)

Or

(b) (i) Explain the wireless LANS and wireless media. (9 marks)

(ii) Explain the Transmission schemes. (6 marks)

III. (a) (i) A user is connected to a frame Relay network through a T-1 line. The granted CIR is 1 Mbps with a B_c of 5 million bits per 5 seconds and B_e of 1 million bits per 5 seconds.

Answer the following questions :—

(1) What is the access rate ?

(2) Can the user send data at 1.6 Mbps ?

(3) Can the user send data at 1 Mbps all the time ? Is it guaranteed that frames are never discarded in this case.

(4) Can the user send data at 1.2 Mbps all the time ? Is it guaranteed that frames are never discarded in this case ? If the answer is no, is it guaranteed that fames are discarded only if there is congestion ?

(15 marks)

Or

(b) (i) Explain the ATM layers and their functions. (10 marks)

(ii) How many virtual connections can be defined in a UNI interface ? How many virtual connections can be defined in an NNI interface ?

(5 marks)

IV. (a) (i) Draw a SONET network using all of the following devices. Label all lines, Sections and paths.

(1) Three STS multiplexers.

(2) Four add/drop multiplexers.

(3) Five regenerators.

(10 marks)

(ii) A company wants to use SONET to multiplex upto 100 digitized voices. Which VT is suitable for this company ?

(5 marks)

Or

(b) Suppose a bridge connects an 802.3 (Ethernet) LAN to an 802.5 (Token Ring) LAN as shown in figure (on page 2)

If the bridge forwards a frame from the Ethernet to the Token Ring, answer the following questions.

1 Does the bridge have to reformat the frame ?

2 Does the bridge need to recalculate the value of the CRC field ?