Total No. of Questions : 8] *[Total No. of Printed Pages : 3*

Roll No .....

IT-5003 (CBGS)

B.E. V Semester

Examination, December 2017

Choice Based Grading System (CBGS)

Computer Network

Time : Three Hours

Maximum Marks : 70

Note: i) Answer any five questions. All questions carry equal marks.

ii) Assume suitable value for missing data, if any.

1. a) Draw the OSI reference model and explain the functions of different layer?

   b) Compare and contrast the delay in connectionless and connection oriented services. Which service creates less delay if the message is large? Which service creates less delay if the message is small?

2. a) Write the step to compute the checksum in CRC code. Calculate CRC for the frame 110101011 and generator polynomial is X^4+X+1 and write the transmitted frame.

   b) Draw the frame format of HDLC protocol. Explain the use of control, data checksum and address fields of HDLC protocol?

3. a) What is leaky bucket algorithm? A computer on 6Mbps network is regulated by token bucket. The token bucket is filled at a rate of 1Mbps. It is initially filled to capacity with 8 megabits. How long can be computer transmit at the full 6Mbps.

   b) What are TCP and UDP? Explain how you will choose TCP and UDP? Compare them.

4. a) Prove that the throughput of network using slotted Aloha can be given as $S=Ge^{-G}$ where G is the load and S is throughput.

   b) How performance is improved in CSMA/CD protocol compared to CSMA protocol?

5. a) In a token ring LAN, there are 256 stations and the distance between two neighboring station is 10 meters. The data rate is 1Mbps and velocity of signal propagation is 2.5×10^5km/sec. at a certain time 116 stations are powered off, 0 stations are active and each active station is holding the token for 10 msec. determine the current scan time and channel efficiency.

   b) Explain the LLC and MAC in IEEE 802 standard and explain the operation of CSMA/CD as used in LAN.

6. a) An organization has a class network 200.1.1 and wants to form subnets for four departments A, B, C, D will hosts as follows:

   A: 72 Hosts B: 35 Hosts C:20 Hosts D:18 Hosts

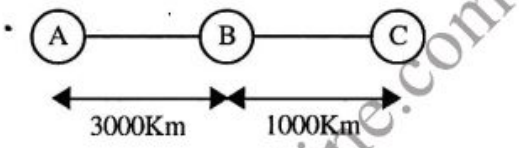
   i) Give a possible arrangement of subnet masks to make this possible.

   ii) Suggest what the organization might do if department D grows to 34 hosts.

   b) Draw and explain the frame format of IP protocol?

7. a) Define a term silly window syndrome and possible solution to overcome its effect?
   b) What is the difference between congestion control and flow control?

8. a) What are the reasons for breaking a long data transmission up into a number of frames?
   b) Three stations A, B and C are connected are shown. A is the source and C is the destination



Between A to B T1 trunk is used using Go Back n protocol. Between B to C stop and wait protocol is used with very short acknowledgement. Frame size is 64 byte and propagation speed is 6μsec/Km. What should be the channel capacity of B to C channel so that station B will not overflow?

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