Seventh Semester B.E. Degree Examination, June 2012
Computer Communication Networks

Time: 3 hrs. Max. Marks: 100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART - A

1. a. With a neat diagram, explain the TCP/IP reference model. (10 Marks)
   b. Explain in detail, the cable TV network used for data transfer. (06 Marks)
   c. Calculate the minimum time to download the one million bytes of information using each of the following technologies:
      i) V.32 modem (04 Marks)
      ii) V.32bis modem
      iii) V.90 modem.

2. a. With a neat diagram of piggy backing in Go-Back-N ARQ protocol, explain the following:
      i) Frame structure of piggy backing (10 Marks)
      ii) Types of events occurred in piggybacking
      iii) Advantages of piggybacking.
   b. With a neat diagram, explain the different types of high level data link control (HDLC) frames. (06 Marks)
   c. The following character encodings are used in data link protocol:
      A : 01000111; B : 11100001; FLAG : 01111110; ESC = 110 00000. Show the bit sequence transmitted (in binary) for the four character frame : A B ESC FLAG when each of the following framing methods are used:
      i) Character count
      ii) Flag bytes with byte stuffing
      iii) Starting and ending flag bytes with bit stuffing. (04 Marks)

3. a. With a suitable flow diagram, explain CSMA/CD protocol and discuss the frame transmission time. (08 Marks)
   b. Explain the following controlled access methods:
      i) Reservation
      ii) Polling
      iii) Token passing. (08 Marks)
   c. Show that the throughput for pure ALOHA is $S = \frac{e^{-2\theta}}{1 - e^{-2\theta}}$ and maximum throughput $S_{\text{max}} = 0.184$. (04 Marks)

4. a. With a neat diagram, explain 802.3 MAC frame format. (10 Marks)
   b. Explain the following standard ethernet physical layer implementations.
      i) 10 base 5 : thick ethernet (10 Marks)
      ii) 10 base 2 : thin ethernet
      iii) 10 base T : twisted pair ethernet
      iv) 10 base F : fiber ethernet.

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PART - B

5 a. Explain the following in brief:
   i) Passive hubs
   ii) Active hubs
   iii) Bridges
   iv) Router
   v) Gateway.

   b. Explain virtual LAN system and how the membership is allocated in the V-LAN system.

6 a. What are the differences between classful and classless addressing?

   b. What is network address translation (NAT)? Explain in brief.

   c. Draw the IPV4 datagram format and explain its field.

7 a. Explain in detail, the distance vector routing algorithm.

   b. Explain three different forwarding techniques.

8 a. Explain in detail, user datagram protocol, UDP.

   b. Describe DNS in the internet.