SUPPLEMENTARY EXAMINATION-2013

6th Semester B.Tech / B.Tech Dual(M.Tech/MBA)

COMPUTER NETWORK IT-603

Full Marks: 60   Time: 3 Hours

Answer any SIX questions including Question No.1 which is compulsory.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as
practicable and all parts of a question should be answered at one place only.

1. a) What are the advantages of multipoint connection over point [2 × 10
        to point connection?

    b) Explain the meaning of bit stuffing?

    c) In classless addressing, can two different blocks have the same
        prefix length? Explain.

    d) Why does datagram network need only end-to-end addressing
        during setup and tear down phase? Why no addresses needed
        during the data transfer phase for this network?

    e) What is the difference between burst error and single bit error?
        How it can be handled?

    f) How does a persistent CSMA differs from a non- persistent
        CSMA?

    g) A signals travel from point A to point B. At point A the signal
        power is 100W.and at point B, the power is 90W. What is the
        attenuation in decibels?

    h) Why the cables are twisted in twisted pair cable?

i) Define block coding. Define its purpose.

j) What is the difference between supervisory frame and information frame in HDLC Protocol?

2. a) We need to synchronous TDM and combines 25 digital resources, each of 100kbps.Each output slot carries 1 bit from each digital source, but one extra bit for synchronization. Answer the following question. [4
    (i) What is the size of an output frame in bits?
    (ii) What is the output frame rate?
    (iii) What is the duration of an output frame?
    (iv) What is the output data rate?

   b) Write down different layers of TCP/IP model. Explain each one of them with example. [4

3. a) Suppose that a Stop-and-Wait ARQ System has a time value that is less than the time to receive an acknowledgement. Sketch the sequence of frame of exchanges that transpire between two stations when station A sends five frame to station B when no error occurs during transmission. [4

   b) An ISP granted the block 80.70.56.0/21.the ISP needs to allocate address for two organizations with each with 500 addresses, two organizations each with 250 addresses, and three organizations with 50 addresses. [4

    (i) Find the number and range of addresses in ISP block.

    (ii) Find the range of addresses for each organizations and the range of the unallocated addresses

    (iii) Show the outline of the address distribution and the forwarding table.

(2)

4. a) Given the data word 101001111 and the divisor 10111, show the generation of the CRC codeword at the sender site. [4

   b) What is the difference between Packet switching and Circuit switching? Explain with examples. [4

5. a) There are only two stations, A and B, in a bus 1-persistence CSMA/CD network with Tp=25.6 micro sec. and Tfr=120 micro sec. Station A has frame to send to station B at time t=0.0 micro sec and station B sending a frame at 23.0 micro sec. Do frame collide? If yes, does station A and B detects collision? [4

   b) Explain the procedure of checksum calculation and verification in the IPV4 protocol. What part of an IPV4 packet is covered in the check sum calculation? Why? Are, options, If present, included in the calculation? [4

6. a) For each of the following four networks, discuss the consequences if a connection fails. [4
      (i)   Six devices arranged in a bus topology
      (ii) Four devices arranged in a ring topology
      (iii) Five devices arranged in a mesh topology
      (iv) Seven devices arranged in a star topology

   b) What is ICMP protocol? Why it is used? What is the minimum size of an ICMPv4 packet which in turn carries an ICMPv4 packet? What is the maximum size? [4

7. a) In a TCP Connection, the initial sequence number at the client side is 2171. The client opens the connection, send three segments, the second of which carries 1,000 bytes of data [4

and closes the connection. What is the value of the sequence number in each of the segments sent by the client?

(i) The SYN Segment

(ii) The data segment

(iii) The FIN segment

b) In a network using the Selective-Repeat protocol with m=4 and sending window size of 8, the value of variables of Sf=62,Sn=67, and Rn=64.Packet 65 has already been acknowledged at the sender site; packet 65 and 66 are received out-of-order at the receiver site. Assume the network does not duplicate the packets. [4

(i) What are the sequence numbers of pending data packets (in transit, corrupt or lost)?

(ii) What are the acknowledgement numbers of pending ACK packets (in transit, corrupt or lost)?

8. Write short Notes on any two. [4 × 2

a) Unguided Media

b) ARP

c) Channelization

d) Unicast vs Multicast Routing

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