Fifth Semester B.E. Degree Examination, June-July 2009

Computer Networks - I

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions selecting at least Two questions from each part.*

PART - A

1 a. With neat diagram explain mesh topology and star topology with application of each. (06 Marks)
   b. What are standards? Name any four standard organizations. (06 Marks)
   c. Explain OSI reference model with functions of following layers (08 Marks)
      i) Physical layer;   ii) Data link layer;   iii) Network layer.

2 a. Explain three causes for transmission impairments. (06 Marks)
   b. Describe with neat waveform any two polar line coding schemes. (06 Marks)
   c. Give data rate formula suggested by Nyquist and Shannon. Low pass communication has BW of 1 MHz. What is Shannon capacity of channel if SNR is 40 db? What bit rate is attainable using 8-level pulses? (08 Marks)

3 a. With neat waveform, explain three methods of digital to analog conversion. Draw waveform with input data 110100. (06 Marks)
   b. What is multiplexing? With neat diagram explain FDM. (06 Marks)
   c. What is TDM? Four sources create 250 characters per second. The frame contains one character from each source and one extra bit for synchronization. Find: i) The data rate of each source; ii) Duration of each character in each source; iii) The frame rate; iv) Duration of output frame; v) Frame size in bits; vi) Data rate of link. (08 Marks)

4 a. Describe the physical and transmission characteristic of following: (06 Marks)
      i) Twisted pair cable; ii) Fiber optic cable.
   b. What is hamming distance? Explain simple parity check code C (5, 4) with d min = 2. How many bits can be corrected? (06 Marks)
   c. What is CRC? If the generating polynomial for CRC code is $x^4 + x^3 + 1$ and message word is 11110000, determine check bits and coded word. (08 Marks)

PART - B

5 a. Differentiate between character oriented and bit oriented format for framing. (06 Marks)
   b. Explain salient features of (08 Marks)
      i) Stop – and – wait protocol;   ii) Stop – and – wait ARQ protocol.
   c. Explain briefly about point-to-point protocol. (06 Marks)

6 a. What is Random Access? Explain following Random access protocols. (06 Marks)
      i) Slotted ALOHA; ii) CSMA / CD.
   b. What is channelization? Explain CDMA. (06 Marks)
   c. Describe frame format for IEEE 802.3 MAC frame. What are salient features of fast Ethernet? (08 Marks)

7 a. Describe the MAC layers in IEEE 802.11 standard. (06 Marks)
   b. In brief explain blue tooth layers. (06 Marks)
   c. Bring out differences between Repeaters, Bridges, Routers and Gateways. (08 Marks)

8 a. Explain SONET multiplexing. (06 Marks)
   b. With neat diagram describe ATM architecture. (06 Marks)
   c. Discuss SONET STS – 1 frame format. Find data rate of an STS – 3 signals. (08 Marks)

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