No. of Printed Pages : 3

MCS-042

MCA (Revised)

Term-End Examination

December, 2010

12357

MCS-042 : DATA COMMUNICATION AND COMPUTER NETWORKS

Time : 3 hours *Maximum Marks : 100*

Note : *Question number 1 is* ***compulsory.*** *Attempt* ***any three*** *questions from the rest.*

1. (a) Illustrate Isochronous and Synchronous Communication. Write its advantages and disadvantages. 6

   (b) Explain Backoff algorithm in CSMA/CD. 6

   (c) Calculate propagation time and transmission time for a 2.5 kbytes message if the bandwidth of the network is 1 Gbps and distance between Sender and Receiver is 72000 km. The propagation speed is 3×10^8 m/s. 5

   (d) The loss in a cable is defined in dB/km. If the signal at the beginning of a cable with loss 0.3 dB/km has a power of 2 mW, what is the power of signal at 5 km ? 5

(e) Explain Upward Multiplexing and Downward Multiplexing. 5

(f) Describe silly window syndrome problem. How it can be avoided ? 6

(g) Explain basic protocols of Transport layer. 7

2. (a) Explain Frame Format and states in Ethernet. 8

(b) Differentiate between congestion control and flow control. 6

(c) Why is sliding window protocol useful in satellite links ? 6

3. (a) Explain the features of state routing protocol ? 8

(b) In a noisy channel with a bandwidth w = 256 kHz, SNR is 30 db. In the same channel, SNR is increased by 3 db. What is the percentage increase in the channel capacity ? 7

(c) Bit stuffing in HDLC. 5

4. (a) Illustrate constellation diagram of 8 - PSK and 8 - QAM. 7

(b) Explain and illustrate hidden and exposed node problems in CSMA/CA. Why is CSMA/CD not useful in wireless LAN ? 8

(c) Show a TCP connection termination sequence. 5

5. (a) Explain Diffie Hellman algorithm - with the help of an example. 8

(b) What is the utility of digital certificate ? How are these signatures created ? 7

(c) What are the different features of IPSec ? 5