

ADCA / MCA (II Yr)
Term-End Examination
June, 2008

CS-09 : DATA COMMUNICATION AND NETWORKS

Time : 3 hours

Maximum Marks : 75

Note :

- (i) Question number 1 is **compulsory**.
- (ii) Answer any **three** questions from the rest.

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1. (a) Ten thousand airline reservation stations are competing for the use of a single slotted ALOHA channel. The average station makes 18 requests/hour. A slot is 125 μ sec. What is the approximate total channel load ? 5
- (b) Compare FDDI and token ring on the following parameters : 6
- (i) Flow control
 - (ii) Access methods
- (c) Explain Shortest Path Routing Algorithm with an example. 5
- (d) Explain upward and downward multiplexing. 4
- (e) Illustrate Circuit switching and Packet switching using diagrams. 5
- (f) Explain CSMA/CD frame format. 5

2. (a) A noiseless channel of frequency 4 kHz is sampled every 1 msec. What is the maximum data rate ? 4
- (b) Explain Token Bucket algorithm with example. A computer on a 6 Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity of 8 megabits. How long can the computer transmit at the full 6 Mbps ? 6
- (c) Why are character and bit stuffing used in data link protocols ? 5
3. (a) Differentiate between various types of fragmentation. At which layer is it implemented ? 5
- (b) Draw TCP header formats. Discuss their fields and explain the functions of these fields. 5
- (c) Why is network security such an important issue ? Suggest certain procedures to secure the computer from Internet threats. 5
4. (a) Explain various signal encoding techniques at physical layer of LAN. 5
- (b) Explain TCP connection management with suitable examples and diagrams. 5
- (c) Suppose that the TCP congestion window is set to 18 K bytes and a time-out occurs. How big will the window be if the next 4 transmission bursts are all successful ? Assume that the maximum segment size is 1 KB. 5

5. (a) How is OSPF implemented in Internet Protocol ? 5
- (b) Calculate the polynomial code checksum for the following : 5
- Message sequence : 110010100
- Generator sequence : 1011
- (c) Why are both virtual channels and virtual path used in ATM ? How are these switched ? 5