Roll No. ..... Total Pages : 03

BT-5/D-18 35114

COMPUTER NETWORKS

CSE-303-N

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Section.

Section I

1. (a) With neat diagram explain the functions of each layer in a TCP/IP reference model and compare it with ISI OSI model. 8

   (b) Explain the different types of communication using wireless media. 4

   (c) Compare the advantages and disadvantages of optical fiber over copper cable. 3

2. (a) Explain in detail, how communication is taking place starting from connection establishment, data transfer and connection termination in :

   (i) Circuit switching (ii) Packet switching.

   (b) Expalin guided media differ from unguided media. Explain the *three* types of guided media and *two* types of unguided media. 7

Section II

3. (a) Discuss the principle of stop and wait flow control algorithm. Draw time line diagrams and explain how loss of a frame and loss of an ACK are handled. What is the effect of delay-bandwidth product on link utilization ?

   (b) The message 11001001 is to be transmitted using CRC error detection algorithm. Assuming the CRC polynomial to be $x^3 + 1$, determine the message that should be transmitted. If the second left most bit is corrupted, show that it is detected by the receiver. 4

   (c) Briefly explain ALOHA and slotted ALOHA protocols. 4

4. (a) Discuss the principle of stop and wait flow control algorithm. Draw time line diagrams and explain how loss of a frame and loss of an ACK are handled. What is the effect of delay-bandwidth product on link utilization ? 8

   (b) Discuss the problems encountered in applying CSMA/CD algorithm to wireless LANs. How do 802.11 specifications solve these problems ? 7

Section III

5. (a) Explain the structure and function of internet protocol version-6. **8**

   (b) Explain the ARP protocol and list the differences in the RARP protocol. **7**

6. (a) Explain in detail about broadcast routing and link state routing with examples. **8**

   (b) Briefly explain IGMP message format and IGMP operation. **7**

Section IV

7. (a) A TCP machine is sending full windows of 65,535 bytes over a 1-Gbps network that has a 10-ms one-way delay. What is the throughput achievable ? What is the efficiency of transmission ? How many bits are needed in the advertised window field of a proposed reliable byte stream protocol running over the above network, for achieving maximum efficiency ? **7**

   (b) Explain in your own words about the Security Requirements for a network. **4**

   (c) Explain about the concept of Cryptography and describe about symmetric key algorithms. **4**

8. (a) Illustrate the features of FTP and its operation. **8**

   (b) Illustrate the features of TELNET. What is the need for network virtual terminal ? **7**