MCA (Revised)

Term-End Examination

December, 2009

00627

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) Consider an error free 64 kbps satellite channel used to send 512 bytes data frames in one direction. Propagation time is 270 m sec in one direction. Compare the window size assuming that the size of acknowledgement is neghligible. **6**

(b) Sketch the Manchester, Differential Manchester, NRZ-L and NRZ-I for the following bit stream : **4**

0 0 0 1 1 1 0 1 0 1

(c) A digital signalling system is required to operate at 9600 bps. If a signal element encodes a 4 bit word, what is the minimum required bandwidth of a noiseless channel ? **5**

(d) Show the operation of MACA algorithm ? Will there be any collision here ? Justify. 5

(e) Describe the operation of token bucket traffic shaper. 5

(f) What happens in congestion avoidance and congestion detection phases of TCP's congestion control mechanism ? Discuss through an illustration. How does the size of congestion window increase in congestion avoidance phase. 3+3+2=8

(g) Explain the Diffie Helman method for key exchange through an example. 7

2. (a) How does ADSL support high internet access over slow telephone lines ? Why it is called asymmetric ? 5

(b) How does statistical TDM try to resolve shortcomings inherent in synchronus TDM ? 5

(c) What is count to infinity problem ? Explain through an example. 5

(d) Show the status of sender's and receivers window of 4 bit sliding window mechanism. How does it increase utilization of channel bandwidth ? 5

3. (a) What is silly window syndrome ? How it is created by the sender ? What is the proposed solution ? Discuss. 2+3+3=8

(b) Explain the operation of CSMA/CD. What happens when a station detects a collision ? 4+2=6

(c) Discuss the Triple DES scheme. What type of attack can be avoided with this mechanism ? 6

4. (a) Compare the TCP header and the UDP header. List the fields in the TCP header that are missing from UDP header. Give the reason for their absence. 6

(b) List and discuss all the fields of IP datagram header which relate to fragmentation. 6

(c) Draw the 802.11 protocol stock and explain its components in brief. 8

5. (a) Describe the operation of OSPF. 6

(b) Illustrate quadrature amplitude modulation (QAM) using appropriate diagram. 5

(c) Differentiate between the following : 9

(i) Class A and Class B address

(ii) Visual circuit and diagram subner

(iii) Upward and Downward multiplexing.

- o O o -