Roll No .....

MEDC-105

M.E./M.Tech. I Semester

Examination, June 2013

Data Communication and Computer Network

Time : Three Hours

Maximum Marks : 70

Note : 1. *Attempt any five questions.*
2. *All questions carry equal marks.*

1. Distinguish between synchronous and asynchronous transmission of data. Suppose a file of 10,000 bytes is to be sent over a line at 2400 bps.
   a) Calculate the overhead in bits and time in using asynchronous communication. Assume one start and eight bits to send the byte itself for each character and one stop bit. The 8-bit character consists of all data bits and no parity bit.
   b) Calculate the overhead in bits and time using synchronous communication. Assume that the data are sent in frames. Each frame consists of 1000 characters = 8000 bits and an overhead of 48 control bits per frame.

2. What is the advantage of sliding window flow control compared to stop-and-wait flow control? What is piggybacking?
   Consider the use of 1000 bit frame on a 1 Mbps Satellite channel with a 270 ms delay. What is the maximum link utilization for
   a) Stop-and-wait flow control

   b) Sliding window flow control

3. Draw and explain the frame structure of HDLC protocol. Enlist the types of stations, link configurations and data transfer modes of operation of HDLC.

4. State and explain the Dijkstra's algorithm. How does it differ from Bellman-Ford algorithm?

5. What is congestion in data networks? What are the causes of congestion and what are the methods of controlling congestion? Explain any one congestion control algorithm.

6. Derive the utilization for 1 - persistent CSMA / CD.

7. Draw and explain the ATM protocol reference model. What are virtual circuit and virtual path?

8. Write short notes on (any two):
   a) Packet Switching and its types
   b) Deadlock and its avoidance
   c) Contention and limited Contention protocol
   d) RS - 232C

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