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MCA (Revised)
Term-End Examination
December, 2014

**MCS-042 : DATA COMMUNICATION AND
COMPUTER NETWORKS**

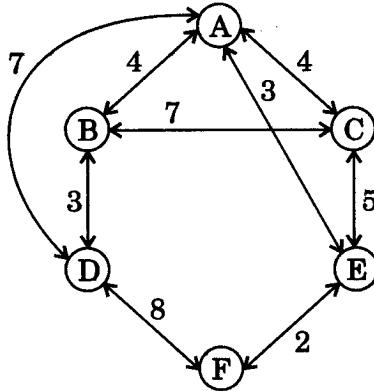
Time : 3 hours

Maximum Marks : 100

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

1. (a) To send 3 bits data at a time, at a bit rate of 3 Mbps, if the carrier frequency is 10 MHz, find the number of levels, the baud rate and the bandwidth. 5
- (b) A pure ALOHA network transmits 200 bits frames on a shared channel of 200 Kbps. What is the requirement to make this frame collision free ? 5
- (c) Data link protocol almost always puts CRC in trailer rather than in a header. Why ? 5
- (d) Explain token bucket algorithm and compare its performance against the leaky bucket algorithm. 10
- (e) What is Silly Window Syndrome ? How is this problem solved in TCP ? 5
- (f) Discuss how the message is transmitted in telephone networks. Compare and contrast circuit switching, packet switching and message switching. 10

2. (a) Consider the following network with the indicated link cost. Using Bellman-Ford Algorithm, find the shortest path from source node A to all nodes. 10



- (b) What is piggybacking ? Explain piggybacking process and where it is used, with an example and an appropriate diagram. 10
3. (a) Differentiate between 'Client/Server' and 'Peer to Peer' architecture. 5
- (b) What is digital signature ? What are the benefits of using digital signature ? 5
- (c) Enlist the features provided by SSL 3.0. 5
- (d) Draw constellation pattern for 4-QAM. 5
4. (a) Discuss the process of link state routing. Explain how it overcomes the problem of count-to-infinity for distance vector routing. 10
- (b) Draw TCP Header format. Explain the use of TCP header fields. 10

5. Write short notes on the following :

4×5=20

- (a) DES
 - (b) FDDI
 - (c) IEEE 802.3
 - (d) LAN, MAN and WAN
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