No. of Printed Pages : 2

MCS-042

MCA (Revised)

Term-End Examination

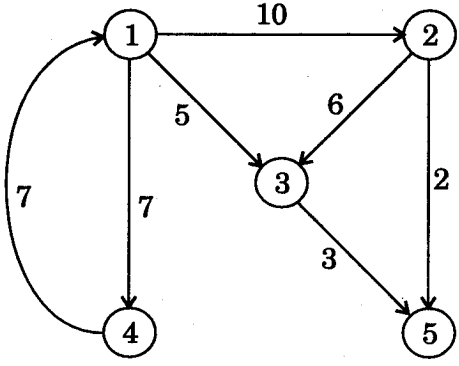
December, 2015 01734

MCS-042 : DATA COMMUNICATION AND COMPUTER NETWORKS

Time : 3 hours *Maximum Marks : 100*

Note : *Question no. **1** is **compulsory**. Attempt any **three** questions from the rest.*

1. (a) Consider the following network with the indicated link cost. Use Dijkstra's shortest path algorithm to compute the shortest path from source node 1 to the network node 5. *10*



(b) Explain the RSA algorithm using an example. *10*

(c) What are the functions of Data Link Layer ? How is error correction carried out at this layer ? *10*

(d) Illustrate congestion detection and congestion avoidance phases in TCP. *5*

(e) Why are RTS and CTS used in IEEE 802.11 protocol ? *5*

2. (a) What is the purpose of PCM ? Explain the different components of PCM encoder. How are quantization levels chosen in PCM ? *10*

(b) Why is sliding window protocol useful in satellite links ? Illustrate GO-BACK-N and SELECTIVE REPEAT protocols. *10*

3. (a) How does token bucket traffic shaper work ? Explain with the help of a diagram. *10*

(b) Discuss the addressing classes in IP. Why is subnet masking used in IP addressing ? *10*

4. (a) Derive an expression for throughput in Slotted Aloha. Why is this system unstable ? *10*

(b) What is Nagle's algorithm ? How does it reduce the wastage of bandwidth ? *10*

5. (a) Why is fragmentation used in IP ? Illustrate OSPF. *10*

(b) How is connection established in TCP ? Illustrate multiplexing in TCP. *10*