No. of Printed Pages : 3

MCS-042

MCA (Revised)

Term-End Examination

03540

December, 2017

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.*

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1. (a) How are headers and trailers attached when the data flows from the top layer to the bottom layer in the OSI reference model ? *10*

(b) What are the situations when UDP is preferred over TCP ? *5*

(c) What are the various steps in the Bellman-Ford algorithm ? *10*

(d) What are the limitations of MACA ? How are these limitations overcome in MACAW ? Explain. *10*

(e) Convert the IP address whose hexadecimal representation is C22F15B2 to a dotted decimal notation. *5*

2. (a) What are the various topologies used in LAN implementation ? Illustrate. "Token rings are better than Ethernet from the delay point of view." Justify or refute the above. *10*

(b) A channel has a bit rate of 4 kbps and propagation delay of 20 msec. For what range of frame sizes does Stop and Wait give an efficiency of at least 50 percent ? *10*

3. (a) What is 3-way handshake protocol in transport layer ? How does it handle lost acknowledgements and delayed acknowledgements ? Illustrate and discuss. *10*

(b) How is congestion controlled in TCP using the Slow Start algorithm ? Clearly show the window adjustment. *10*

4. (a) Explain the count to infinity problem in implementing the Bellman-Ford algorithm. How is the above problem overcome in link-state routing problem ? *10*

(b) Describe Leaky Bucket and Token Bucket traffic shaper algorithms. *10*

5. (a) Explain RSA algorithm with the help of suitable example. *10*

(b) What is the Kerberos authentication mechanism ? How is it implemented ? *10*