B.Sc. (Honours) Semester-VI Examination 2017
Computer Science
Course : BCSC-61
(Computer Networks)

Time : 3 Hours **Full Marks : 40**

Questions are of value as indicated in the margin

Attempt Question No. **1** and **any four** from the rest

1. Mark True/False against each statement with justifications.
   (a) A file transfer application between two hosts in the same physical network can be implemented without using IP and TCP.
   (b) Maximum length of a CSMA/CD bus network is unlimited.
   (c) TCP interprets loss of segments as indication of congestion in the route. 3+3+2=8
2. (a) A TCP connection is established between two hosts A and B to start data transfer from A to B Maximum buffer size in B for storing TCP segments is 32KB and MSS = 1KB. If RTT = 1sec (approx), calculate the time required by the TCP session to reach peak throughput in error-free condition.
   (b) Briefly illustrate Active Open and Passive Open states for a TCP connection. 4+4=8
3. (a) What is the significance of subnet mask of an IP address?
   (b) IP address of a host in a network is 14.139.214.2. If this network is provisioned to have upto 4096 hosts, calculate the net id of this network.
   (c) What is the use of TTL field in IP header? 3+3+2=8
4. (a) What are "authoritative' and "non-authoritative" responses of DNS query?
   (b) Illustrate iterative and recursive DNS queries with examples. (2+2)+(2+2)=8
5. (a) Illustrate the operation of a slotted ALOHA network with collision detect.
   (b) If speed of signal within the medium (c) = 10^8 m/sec, length of the medium (L) = 100 metres and bit rate = 2 Mbps, calculate the number of bits during collision detect period. 4+4=8
6. (a) If two hosts A and B in a slotted ALOHA system with static persistency undergoes collision at their respective first transmission attempts, find what should be the persistency value so that probability of 4^{th} successive collision among them is $<= 10^{-4}$.
   (b) Briefly illustrate Binary Exponential Backoff principle. 4+4=8

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