

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
END SEMESTER EXAMINATION-2015

B.Tech VI Semester

COURSE CODE: 10B11CI611

MAX. MARKS: 45

COURSE NAME: Computer Networks

COURSE CREDITS: 04

MAX. TIME: 3 HRS

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Section A

1. Attempt all the parts.

1*9

- a. Why are protocols needed?
- b. Compare and contrast PCM and DM.
- c. Find out what networks are used at your university or place of work. Describe the network types, topologies, and switching methods used there.
- d. Discuss the concept of redundancy in error detection and correction.
- e. Define piggybacking and its usefulness.
- f. What is the purpose of BGP?
- g. Do port addresses need to be unique? Why or why not? Why are port addresses shorter than IP addresses?
- h. What is the difference between open-loop congestion control and closed-loop congestion control?
- i. How is HTTP related to WWW?

Section B

4.5*3

2. (a) Compare the TCP segment and the UDP datagram? UDP is a message-oriented protocol. TCP is a byte-oriented protocol. If an application needs to protect the boundaries of its message, which protocol should be used, UDP or TCP?
(b) The following is a dump of a TCP header in hexadecimal format.
05320017 00000011 00000000 500207FF 00000000. (i) What is the source port number? (ii) What is the destination port number? (iii) What the sequence number? (iv) What is the length of the header? (v) What is the type of the segment? (vi) What is the window size?
(c) In SCTP, the value of the cumulative TSN in a SACK is 23. The value of the previous cumulative TSN in the SACK was 29. What is the problem?
3. (a) Compare and contrast the IPv4 and the IPv6 datagram.

- (b) In a block of addresses, we know the IP address of one host is 182.44.82.16/26. What are the first address (network address) and the last address in this block?
4. (a) How congestion control is performed by leaky bucket algorithm? In what way token bucket algorithm is superior to leaky bucket algorithm?
- (b) A computer on a 6-Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 Megabits. How long can the computer transmit at the full 6 Mbps?

Section C

5. (a) Contrast and compare distance vector routing with link state routing.
- (b) Consider the network shown below (Figure 1) and assume that each node initially knows the costs to each of its neighbors. Consider the link state routing algorithm and show the distance table entries at node 1.

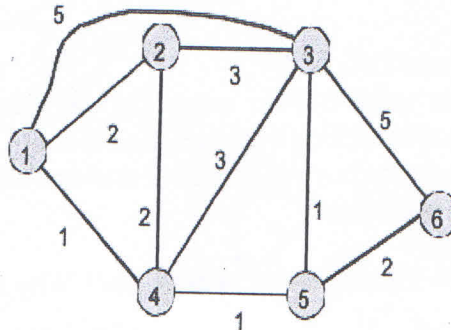


Figure 1: The network

6. (a) Write the algorithmic steps for CSMA/CA method? How does it differ from CSMA/CD method?
- (b) In a CSMA/CD network with a data rate of 10 Mbps, the maximum distance between any station pair is found to be 2500 m for the correct operation of the collision detection process. What should be the maximum distance if we increase the data rate to 100 Mbps? To 10 Gbps?

Write the short notes on following:

- (a) Count to Infinity problem
- (b) MIME
- (c) SYN flooding attack