B.E / B.TECH DEGREE EXAMINATION, MAY/JUNE 2016

Fifth Semester

Common to B.E – Computer Science and Engineering and B.Tech – Information Technology

13IT503 – COMPUTER NETWORKS

(Regulations: Mepco – R2013)

Duration: 3 Hours   Maximum Marks:100

Answer ALL Questions

PART A – (10 Î 2 = 20 Marks)

1. A light signal is travelling through a fiber. What is the delay in the signal if the length of the fiber is 500 m and 25 km. Assume the propagation speed is 2×10^8 m/s.

2. Mention the size and format of Ethernet Physical address.

3. Find the Class of the following IPv4 addresses.

   A. 122.45.3.21

   B. 172.145.7.56

4. Classless addressing overcomes address depletion and gives more generalizations access to Internet. Justify it.

5. Mention the various UDP services.

6. What do you mean by I/O multiplexing?

7. Why do we need a DNS system when we can directly use an IP address?

8. Compare and contrast IMAP and POP3.

9. Give the significance of IPSec protocol.

10. Mention any two IPv6 QoS parameters.

PART B – (5 Î 16 = 80 Marks)

11. a) i.   What is network topology? Compare and contrast the different categories of network topology.   (10 Marks)

11. a) ii. Design a network topology for your college office having 25 computers, 5 network printers and 2 smart phones. Allocate the IP address for all the devices in the network.   (6 Marks)

OR

11. b) i. With a neat diagram explain the architecture and frame format of wireless LAN. (10 Marks)

11. b) ii. How does the Ethernet address 1A:2B:3C:4D:5E:6F appear on the line in binary?. In a Gigabit Ethernet LAN, the average size of a frame is 1000 bytes. If a noise of 2 ms occurs on the LAN, how many frames are destroyed? (6 Marks)

12. a) i. An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows.

The first group has 64 customers; each needs 256 addresses
The second group has 128 customers; each needs 128 addresses
The third group has 128 customers; each needs 64 addresses

Design the sub blocks and find out how many addresses are still available after these allocations. (12 Marks)
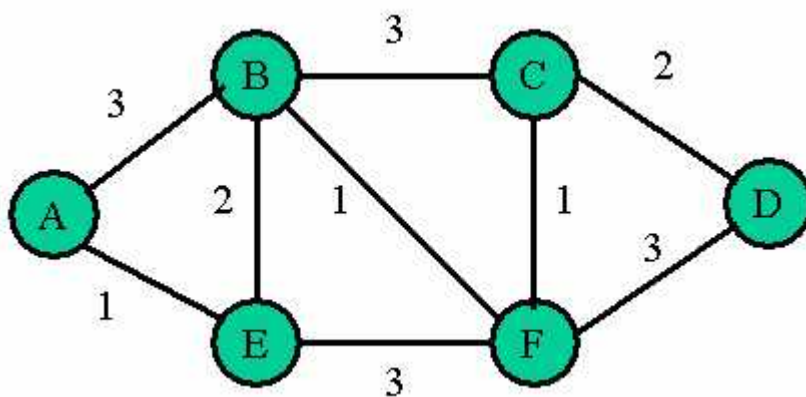
12. a) ii. List out the differences between circuit and packet switching. (4 Marks)

OR

12. b) i. Define multicasting. With a neat diagram explain the operation of IGMP. (6 Marks)

12. b) ii. Apply the Link state routing algorithm and derive the routing table for the node A.

(10 Marks)

13. a) i. Draw the FSM diagram to represent the connection-oriented transport layer service and explain. (8 Marks)

13. a) ii. What is Congestion control? With an example explain any two TCP congestion techniques. (8 Marks)

OR

13. b) i. What is socket?. Write a chat application using TCP sockets in C programming language. (8 Marks)

13. b) ii. With a neat architectural diagram, compare and contrast the iterative server and concurrent server operations. (8 Marks)

14. a) i. With a suitable block diagram explain the various components of an e-mail system architecture. (8 Marks)

14. a) ii. Give the significance of MIME protocol. Draw the MIME header format. (4 Marks)

14.a) iii. FTP uses two separate well-known port numbers for control and data connection. Does this mean that two separate TCP connections are created for exchanging control information and data? Justify. (4 Marks)

OR

14. b) i. With a neat diagram, elaborate about the SNMP concept and the various components of network management used on the Internet. (8 Marks)

14. b) ii. Distinguish between a GetRequestPDU and SetRequestPDU with suitable diagrams. (8 Marks)

15. a) i. Using the CIDR notation, show how the IPv6 address mapped to the IPv4 address 126.45.67.231 (4 Marks)

15. a) ii. List and compare the various IPv6 address types and address format. (8 Marks)

15.a) iii. Analyse the various security issues in IPv6. (4 Marks)

OR

15. b) i. Draw the format of IPv6 datagram and give the purpose of various fields present in it. (4 Marks)

15. b) ii. Bring out the salient features of IPv6 and analyze the various issues that might arise while transitioning from IPv4 to IPv6. (12 Marks)