



**B.E/B.TECH DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2013**

**INFORMATION TECHNOLOGY**

**FIFTH SEMESTER – REGULATION 2008**

**IT 9303 COMPUTER NETWORKS**

**Time: 3 hrs**

**Max.Marks:100**

**Answer All Questions**  
**Part – A (10X2 = 20 Marks)**

1. Which layer implements the process to process channel in the OSI network architecture? Justify your answer.
2. Determine the CRC code for the message polynomial  $x^7+x^5+x^4+x^2+x^1+x^0$  and the divisor polynomial  $x^5+x^4+x^1+x^0$ .
3. Whether hubs extend the collision domain or restrict the collision domain? Justify your answer.
4. How do we avoid the condition of the whole network becoming useless just because of the failure of node in 802.5 Token Ring network?
5. What are the various fields present in one entry of a Virtual Circuit table?
6. Write short notes on source routing.
7. For a host on a class A network with the address 20.38.40.2 and a subnet mask of 255.248.0.0 determine the subnet address where the host resides.
8. What is the role of the variable Maximum Segment Size in TCP?
9. Differentiate congestion control and congestion avoidance.
10. Why do multimedia applications prefer UDP rather than TCP?

**Part – B (5X16 = 80 Marks)**

11. Explain the role of process model, message buffers and common library routines in implementing network protocols. (16)
12. a. i. Explain the physical properties of Ethernet(802.3) LAN. (8)  
ii. Coaxial cable Ethernet cable was limited to a maximum of 500m between repeaters, which regenerate the signal to 100% of its original amplitude. Along one 500-m segment, the signal could decay to no less than 14% of its original value (8.5dB). Along 1500m, then, the decay might be  $(0.14)^3 = 0.3\%$ . Such a signal, even along 2500m, is still strong enough to be read; why then are repeaters required every 500m? (8)  
(OR)
12. b. i. Explain the token ring media access protocol. (10)  
ii. An IEEE 802.5 token ring has five stations and a total wire of 230m. How many bits of delay must the monitor insert into the ring? Do this for both 4Mbps and 16Mbps; use a propagation rate of  $2.3 * 10^8$  m/s. (6)

- 13a. i. Explain the need and process of performing subnetting. (8)
- ii. Suppose hosts A and B are on an Ethernet LAN with class C IP network address 200.0.0. It is desired to attach a host C to the network via a direct connection to B (see Figure 1). Explain how to do this with subnets; give sample subnet assignments. Assume that an additional network address is not available. What does this do to the size of the Ethernet LAN?

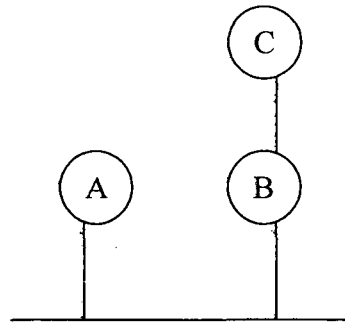


Figure 1 (8)

(OR)

- 13b. i. Explain the link state routing algorithm. (8)
- ii. For the network given in Figure 2, show how the link state algorithm builds the routing table for node D.

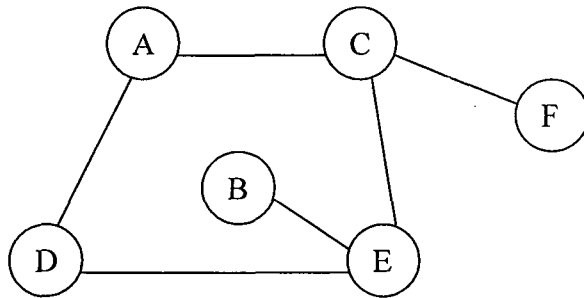


Figure 2.

Weights of the links are A-C:3, A-D:8, B-E:2, C-E:1, C-F:6, D-E:2 (8)

- 14a. i. Explain the original, Karn/Patridge and Jacobson/Karel's algorithms of adaptive retransmission in TCP. (10)
- ii. Explain the three way handshake protocol of TCP used to establish the connection. (6)

(OR)

14b. Explain the congestion avoidance schemes of DECbit and RED. (16)

15a. Explain the architecture and protocols of E-Mail system (16)

(OR)

15b. Explain the architecture and protocols of WWW. (16)