B.E/B.TECH. END SEMESTER EXAMINATIONS, NOV./DEC.2011

BRANCH : Information Science and Technology   **VII Semester**   **Regulation : 2008**

IT 9026 TCP/IP Design & Implementation

TIME: 3 Hours   **Max Marks: 100**

Answer All Questions

PART-A (10 x 2 = 20 Marks)

1. Calculate the number of subnets in a network with 20 hosts per subnet for a network ID of 192.168.1.0 .
2. Why does the ARP request message carry the IP address and link layer address of the sender? What will be the contents of ARP Reply packet?
3. Give two differences between Subnetting and Supernetting?
4. What is meant by silly window syndrome? How do you avoid?
5. How is datagram from LocalHost to IP handled by IP Process?
6. Give the contents of IGMP Query and Report messages.
7. What is meant by TCB? When is it created?
8. What are the three input processes expected during FIN-WAIT1 state? Give the change of state for each input.
9. Give the conceptual transition among four TCP output states .
10. What are the two different ways of handling Urgent Data?

PART-B (5 x 16 = 80 Marks)

11. An organization has 6 subnets with the size of each is given below:

    Subnet 1 – 30
    Subnet 2 – 30
    Subnet 3 – 30
    Subnet 4 – 30
    Subnet 5 – 60
    Subnet 6 – 60

    (i) Assign net address, subnet address and IP address to individual hosts.   (8)

    (ii) Give the network configuration and construct a Routing table which should have entries to reach all Subnets.   (8)

12. (a). Illustrate in detail with examples, how 4 different ICMP request/reply messages and 4 different error messages are handled.

(OR)

12. (b). A file of size 0.5MB needs to be transmitted from A to B with an MSS of 512 bytes. Show the transmissions starting from connection establishment to closing of the connection. Each stage, show the Window size, Window advertisement, Sequence number and ACK number. Sender Window size = Receiver Window size = 2KB.

13. (a). Implement TCP transmission schemes which demonstrates Slow start, Congestion avoidance, Fast transmit and Fast recovery. Finally the transmission must be completed inspite of all hurdles in between.

(OR)

13. (b). (i). Explain the procedures for handling incoming and outgoing datagrams by IP process.   (8)

   (ii). How is the Routing Table maintained? Explain the procedures involved in maintaining and obtaining a route from Routing Table.   (8)

14. (a). Two IP datagrams are sent from source to destination. During transmission, first datagram is divided into two fragments as f_{11} and f_{12}. The second datagram is divided into two fragments as f_{21} and f_{22}. At the destination the fragments are received in the following order: f_{21} , f_{12} , f_{11} and f_{22} . Explain with the procedures used to insert the fragments at the appropriate place and send it to the destination.

(OR)

14. (b). With the help of FSM, list the events which will move from one state to other state. In each state, give procedures for handling different types of incoming segments and action taken for each input.

15. (a). (i). Show a situation where PERSIST Timer is scheduled to send a probe signal and sending a gratuitous ACK from the receiver side. Explain the procedure used on both the occasions.   (8)

   (ii). Implement Transmit and Retransmit states.   (8)

(OR)

15. (b).(i). How are timed events maintained? With the data structure explain how do you insert and delete a timer event.   (8)

   (ii). Explain with an example, how Urgent Data and Push function are handled at sender and receiver side.   (8)