## H 1360

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2006.

Sixth Semester

Information Technology

IF 361 — TCP/IP AND SOCKET PROGRAMMING

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. In class–B network, on the Internet has a subnet mask of 255.255.240.0, what is the maximum number of hosts per subnet?

2. In IP the checksum covers only the header and not the data, why do you suppose this design was chosen?

3. What is the difference between half open and half close connections?

4. What happens when a TCP connection request is sent to a non–existent port?

5. What network hardware uses ARP?

6. List any two fields present in the Transmission Control block.

7. What is the need for concurrent servers?

8. What is the use of 'listen' function?

9. List the steps involved in creating a TCP based echo server.

10. What ICMP messages are used by ping?

PART B — (5 × 16 = 80 marks)

11. (i) Explain how IP fragments are reassembled. Explain the necessary data structures. (8)

    (ii) Explain the TCP output processing states with necessary functions involved. (8)

12. (a) (i) In what cases the ICMP messages will not be generated?

      (ii) Write a note on options field of IP packet.

      (iii) Explain the operation of ARP when the user types : *ftp user n*

<center>Or</center>

    (b) (i) What are the limitations of Routing Information Protocol?

      (ii) What is the need for subnet addressing? What is the use of su
mask?

      (iii) IPv6 header does not have the 'protocol' field. How is it possibl
identify the upper layer protocol? Explain.

13. (a) Explain the rules regarding the initiation and termination of
TCP connection with a state transition diagram.

<center>Or</center>

    (b) (i) Explain the operation of TCP in interactive flow environment wit
necessary algorithms.

      (ii) What is the use of Karn's algorithm in TCP's retransmission policy?

14. (a) (i) What is the need for port numbers? (5)

      (ii) List and explain the various ranges of port numbers.

      (iii) Give the IPv4 socket address structure as defined by POSIX and (7)
explain the fields.

<center>Or</center>

    (b) Explain the following system calls (5)

      (i) htons ( ) (6)

      (ii) accept ( ) (5)

      (iii) recvfrom ( ).

15. (a) Write a TCP based client/server application to compute the turn around (16)
time between two hosts.

<center>Or</center>

    (b) Write a UDP based client/server application to list all machines (16)
connected in the network.

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