

This question paper contains 4 printed pages.]

1804

Your Roll No.

B.Sc.(Hons.) Computer Science / VI Sem. A

**Paper 602 – Networks Programming
and Administration**

(Admissions of 2001 and onwards)

Time : 3 Hours

Maximum Marks : 75

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

*Attempt all questions. Parts of a question
should be attempted together.*

1. (a) Explain the need for TIME_WAIT state in TCP connection termination process. 3
- (b) What is a socket pair ? Explain in the context of a concurrent server with the help of a diagram. 3
- (c) Write a set of commands to display IP address of all hosts connected in a network. 3
2. (a) Describe the representation of data 0x1020 in Little Endian and Big Endian format. 2

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- (b) What are the different errors returned from the connect() socket call ? 3
 - (c) Explain how is the IP address and port number allocated to a client if it does not call bind(). 3
 - (d) What is significance of the fudge factor in BACKLOG parameter of listen() socket call ? 2
 - (e) What is the purpose of close() socket call ? Does it always initiate the 4 way TCP connection termination ? 3
 - (f) What do you understand by zombies and how are they handled by using a signal handler ? 5
3. (a) What are the different values assigned to 'timeval' structure in select() socket call ? 3
- (b) Is recv() socket call blocking ? Can we put a time limit on the recv() socket call ? 3
- (c) Describe the conditions under which a socket becomes ready for reading in select() socket call. 4
4. (a) What are half-open connections and how does TCP detect such connections ? 3
- (b) What are socket send and receive buffers ? Write a code snippet to change the values of the low water marks of both the buffers. 3

(c) Explain in detail the purpose of TCP_NODELAY socket option. 4

(d) What do you mean by connected UDP sockets ? Does it start the 3WHS process ? What is the purpose of specifying AF_UNSPEC in address family of connect call in case of UDP sockets ? 5

5. Write a TCP client and TCP concurrent server implementation in C. Server's domain name is www.xvz.com. Specification of client and server are mentioned below :

(a) Server is running a service on port 1026.

(b) Client connects to that service of the server.

(c) Server prints the IP address and port number of connected client.

(d) Client gets input from user and sends it to server.

(e) Server prints the message on screen and sends the same message back to client.

(f) Client then disconnects from the server. 10

6. (a) What is the purpose of traceroute system call and explain its working ? 5

- (b) What are the most common uses of netstat command ? Explain the output of
(i) netstat-s (ii) netstat-r 3
- (c) What is the role of packet sniffers in network management ? 2
- (d) The network 134.122.0.0/16 has been divided into/ 19 networks. 3
- (i) How many /19 networks are there ? List them ?
- (ii) How many hosts could be there on each network ?
- (iii) What is the broadcast address of each network ?