

[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 6095

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Your Roll No.....

Unique Paper Code : 234609

Name of the Course : B.Sc. (H) Computer Science

Name of the Paper : Network Programming and Administration (Elective)
[CSHT – 616(iii)]

Semester : VI

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. All questions in Section – A are compulsory.
3. Attempt any four questions in Section – B.

SECTION – A

(All questions are compulsory.)

1. (a) Differentiate between stateful and stateless programs (servers). Why is designing of stateful server difficult? (1.5+1.5)
- (b) Which end of a connection goes through the TIME WAIT state? What is the duration of this state? What is the reason for having this state? (1+1+1)
- (c) Close () and shutdown () functions are used to close a socket; with the help of examples show how these function calls differs. Also explain which one is graceful. (3+1)
- (d) When will my application receive SIGPIPE? (2)

P.T.O.

- (e) What is a slow system call ? When an error of EINTR returned by such call ? (2)
- (f) What is I/O multiplexing ? Why Asynchronous (I/O) multiplexing is better performance than the Synchronous (I/O) multiplexing. (1+2)
- (g) What is the role of packet sniffer in the communication network ? (2)
- (h) What is socket descriptor ? Explain the importance of socket descriptor table in network communication. (1+2)
- (i) What is byte ordering ? Explain the functions used for byte order conversion. (1.5+1.5)
- (j) Give the steps that allow an IPV4 TCP client to communicate with an IPV6 server. (3)
- (k) How can I tell when a socket is closed on the other end ? (2)
- (l) Can we have two sockets waiting to receive data in a single process ? Explain. (2)
- (m) Explain the syntax of the following system calls along with meaning of parameters used by them: sendto(), getservbyname(), setsockopt(). (3)

SECTION – B

(Attempt any four questions from Section B.)

2. (a) Differentiate between wait and waitpid function with proper definition. (4)
- (b) Short notes :
- (i) SNMP
 - (ii) Netstat (2×2)

- (c) If bind () fails, what should I do with the socket descriptor ? (2)
3. (a) In case of concurrent server. If the client host crashes then how does the server get this information ? Is there some way to detect such half open connection ? Explain. (5)
- (b) You are trouble shooting a network problem and netstat -rn gives you the following output.

Destination	Gateway	Genmask	Flags	MSS	Window	irt t	Iface
128.138.202.0	0.0.0.0	255.255.255.0	U	60	0	0	etho
127.0.0.0	0.0.0.0	255.0.0.0	U	60	0	0	do

- (i) What is the problem in the output ?
- (ii) What command would you use to fix it ? (3)
- (c) What is the difference between select () and poll (). (2)
4. (a) Briefly explain Nagle algorithm. (4)
- (b) What is meant by descriptor reference count in case of sockets ? How is this value changed ? (4)
- (c) What is asynchronous error ? (2)
5. (a) Write a program to print IP addresses of a host. (5)
- (b) Explain accept() system call with its parameter ? (2)
- (c) By nature, UDP server is iterative or concurrent ? Explain. (3)
6. (a) What is Inetd services ? (3)

- (b) A host with IP address 108.67.18.70 sends a limited broadcast packet to all hosts in the same network. What are source and destination IP address used in this case? (2)
- (c) Why must value result arguments such as the length of a socket address structure be passed by reference? (3)
- (d) What exactly does SO_LINGER do? (2)