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*This question paper contains 4 printed pages.]*

**6629**

*Your Roll No. ....*

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

**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 from section A  
and attempt any **four** from section B.*

**Section - A**

**(Compulsory)**

1. (a) When is a Socket descriptor ready for reading and writing ? 5
- (b) What is meant by Descriptor reference count in case of sockets ? How is this value changed ? 4
- (c) What is the problem if we pass binary values across the socket instead of strings in client

[P.T.O.]

server architecture ? What is the solution to this problem ? 5

2. (a) What are the different entities that comprise a socket pair ? 2
- (b) What is the role of packet sniffers in network management ? 2
- (c) Write a program for daytime client and server. 6
3. (a) What are the most common uses of netstat command ? Explain the output of (i) netstat -a, (ii) netstat -r 4
- (b) What is the difference between wait ( ) and wait pid ( ) system calls. 3
- (c) Briefly explain the purpose of the following system calls in socket programming giving their prototypes. 2+2=4
- (i) inet - addr ( )
- (ii) inet - pton ( )

### Section - B

(Attempt any four questions)

4. (a) Define the term signal and signal disposition. What are the three choices for signal disposition ? 2+3=5

(b) Write the applications of select ( ) system call emphasizing its arguments. Also, differentiate between select ( ) and pselect ( ) system calls. 3+2=5

5. (a) Write the prototype for the listen ( ) system call and explain its significance. Also explain the purpose of back log parameter. 3+2=5
- (b) What is DHCP ? How does DHCP work ? 2+3=5
6. (a) What is meant by a Zombie state ? What is its purpose ? How are Zombies handled in a system ? 6
- (b) The last argument to connect ( ) system call is an integer and to accept ( ) system call is a pointer to an integer. Explain. 4
7. (a) What is the difference between synchronous I/O model and asynchronous I/O model ? Draw appropriate diagrams. 1+5=6
- (b) What is Nagle's Algorithm of TCP ? How can it be disabled ? 2+2=4
8. (a) What are the differences between close and shut-down system calls ? 3

- (b) Write a short note in IP Spoofing. 2
- (c) Can we have two servers running on the same IP address and same post number ? Justify your answer. 5
9. (a) What are the differences between the connect ( ) system call under TCP and UDP ? 3
- (b) The network 172.16.20.0/16 has been subdivided into /22 networks.  $2+1+2+2=7$
- (i) How many networks are there ? List them.
- (ii) How many hosts could there be on each networks ?
- (iii) Determine which network the address 171.16.23.9 belongs to.
- (iv) What is the broadcast address for each network ?