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BCS-052

**BACHELOR OF COMPUTER
APPLICATIONS (BCA) (REVISED)**

Term-End Examination

December, 2022

**BCS-052 : NETWORK PROGRAMMING AND
ADMINISTRATION**

Time : 3 Hours

Maximum Marks : 100

Note : *Question number 1 is compulsory. Attempt
any **three** questions from the rest.*

1. (a) Given the IP address as 111.65.17.22, find
the network address. 3

P. T. O.

- (b) Identify the class of the following IP addresses : 2
- (i) 22.100.150.200
 - (ii) 150.100.100.200
- (c) Differentiate between `getsocket()` and `setsocket()` system calls. 2
- (d) How are the following socket types useful in socket programming ? 6
- (i) Stream socket
 - (ii) Datagram socket
- (e) What is the primary function of a web server ? Explain the importance of Apache and Samba web servers. 6
- (f) With the help of a diagram, explain 3-way handshaking technique to establish a TCP connection. 6

- (g) For what purpose FTP is used ? Describe the FTP commands for copying files to or from remote host. 4
- (h) What are the two ways to close a socket ? What is the difference between the two ? 5
- (i) What is the use of BIND ? Describe its components. 6
2. (a) A DNS client is looking for IP address of XXX.YYY.com. Show the complete procedure for mapping a domain name to IP address. 6
- (b) What are the common services for which remote administration is used ? Describe

the following utilities for secure data communication :

- (i) SSH
- (ii) rlog in 8
- (c) Discuss the importance of the following flags of TCP header : 6
 - (i) Urgent pointer
 - (ii) Push
 - (iii) Acknowledgement
- 3. (a) What is the use of the following Ethernet configuration tools ? 5
 - (i) IPconfig
 - (ii) routenetstat-rn
 - (iii) lsmod
 - (iv) ping.IP-address
 - (v) dhclient

- (b) Write a concurrent TCP server and a TCP client program using C-language having the following specifications : 10
- (i) The server program can handle upto four clients concurrently.
 - (ii) The client program sends values $X = 5$ and $Y = 9$ of two variables.
 - (iii) The server program swaps the value of the variables and returns the result of the respective clients.
- (c) Draw the UDP header format and explain the purpose of the following fields : 5
- (i) Source Port No.
 - (ii) Checksum
4. (a) How does the distance vector routing algorithm work ? Explain. 6

- (b) What are reasons for occurrence of networking problem ? Describe the following network troubleshooting tools : 8
- (i) Wmap
 - (ii) Traceroute
 - (iii) Netstat
- (c) Write the syntax and explain the use of the following system calls : 6
- (i) send()
 - (ii) sendto()
 - (iii) recvfrom()
5. (a) Define Integrity in the context of network security. 2
- (b) What information do we obtain from the following functions ? How are they useful in socket programming ? 8
- (i) gethostbyname()

- (ii) `gethostaddress()`
 - (iii) `getsockname()`
 - (iv) `getservbyname()`
- (c) Write an algorithm for UDP client and UDP server as per the following specifications : 10
- (i) UDP client will send a number to the server
 - (ii) The UDP server will return the factorial of that number.