BCS-052

BCA

Term-End Examination

December, 2013

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours *Maximum Marks : 100*

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

1. (a) What is a purpose of "Type of Service" field used in the header of IP datagram ? Also, explain the maximum number of hops that a datagram can remain in, in the network before it is discarded. 5

    (b) For what purpose function **"getservbyname()"** is used in context of socket programming. Also, explain it's syntax and different parameter taken by it. 5

    (c) Describe any two mechanisms used by TCP for flow control. 5

    (d) What is HTTP ? Explain any four methods used by HTTP for data transfer. 5

    (e) Differentiate between POP and IMAP protocols. 5

    (f) Explain the similarities and differences between ARP and RARP. 5

    (g) Discuss the cloud computing model. 5

    (h) What is Virtual Network Computing (VPN) ? Compare VPN with FreeNX. 5

2. (a) What kinds of segments are used in connection establishment and termination using 3-way handshaking in TCP ? Explain through a suitable diagram.   **10**

    (b) What are the various IP address classes ? How many bits are used to represent the network ID and host ID part of these classes.   **10**

3. Write an algorithm each for TCP client and server with the following specification.   **20**

    • TCP Server can handle maximum 5 clients at a time.

    • TCP client will initiate the communication and send any alphanumeric character randomly to the server.

    • TCP server accepts the character and as a reply it sends the ASCII value of that character to the respective client.

Note : Make suitable assumptions, if any.

4. (a) Explain the count-to-infinity problem related to distance vector routing with the help of an example.   **5**

    (b) Write the syntax along with parameters used by **listen()** and **accept()** system call.   **5**

    (c) What is DHCP ? Explain the working of DHCP with the activities performed between DHCP Server and DHCP Client.   **10**

5. Differentiate between the following :   **20**
    (a) TCP/IP and OSI Model
    (b) IPv4 and IPv6
    (c) Primary name server and Secondary name server
    (d) FAT16 and FAT32

———

No. of Printed Pages : 2 | BCS-052

BCA

Term-End Examination

December, 2013

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours | *Maximum Marks : 100*

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

1. (a) What is a purpose of "Type of Service" field used in the header of IP datagram ? Also, explain the maximum number of hops that a datagram can remain in, in the network before it is discarded. 5

   (b) For what purpose function **"getservbyname()"** is used in context of socket programming. Also, explain it's syntax and different parameter taken by it. 5

   (c) Describe any two mechanisms used by TCP for flow control. 5

   (d) What is HTTP ? Explain any four methods used by HTTP for data transfer. 5

   (e) Differentiate between POP and IMAP protocols. 5

   (f) Explain the similarities and differences between ARP and RARP. 5

   (g) Discuss the cloud computing model. 5

   (h) What is Virtual Network Computing (VPN) ? Compare VPN with FreeNX. 5

2. (a) What kinds of segments are used in connection establishment and termination using 3-way handshaking in TCP ? Explain through a suitable diagram. **10**

   (b) What are the various IP address classes ? How many bits are used to represent the network ID and host ID part of these classes. **10**

3. Write an algorithm each for TCP client and server with the following specification. **20**

   - TCP Server can handle maximum 5 clients at a time.
   - TCP client will initiate the communication and send any alphanumeric character randomly to the server.
   - TCP server accepts the character and as a reply it sends the ASCII value of that character to the respective client.

Note : Make suitable assumptions, if any.

4. (a) Explain the count-to-infinity problem related to distance vector routing with the help of an example. **5**

   (b) Write the syntax along with parameters used by **listen()** and **accept()** system call. **5**

   (c) What is DHCP ? Explain the working of DHCP with the activities performed between DHCP Server and DHCP Client. **10**

5. Differentiate between the following : **20**
   (a) TCP/IP and OSI Model
   (b) IPv4 and IPv6
   (c) Primary name server and Secondary name server
   (d) FAT16 and FAT32

———

No. of Printed Pages : 3

BCS-052

BCA

Term-End Examination

June, 2014

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours *Maximum Marks : 100*

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

1. (a) What is the maximum capacity of datagram   5
   can be carried by Internet protocol ? Also,
   explain, how IP datagram are deleted from
   the network.

   (b) The following is the TCP header in   10
   hexadecimal format :

   04321017   01231311   00000234

   62324216   00134217

   (i) What is the destination port
   number ?

   (ii) What is the sequence number ?

   (iii) What is the source port number ?

   (iv) What is the length of TCP header ?

   (v) What is the acknowledgement
   number ?

(c) What is ICMP ? Explain the network informations it carries. **5**

(d) Which field of IP header is used for Congestion Control and how ? **5**

(e) Why and how broadcasting is used in ARP ? **5**

(f) Write any five disk management functions. **5**

(g) How the "Disc User" is checked in Linux ? Explain with an example. **5**

2. (a) "Internet protocol is an unreliable, best effort, connection - less protocol". Explain the meaning of the above statement. **3**

(b) What are the data types defined by socket interface ? Also, explain the purpose of any four. **7**

(c) What is meant by byte - ordering ? For what purpose following socket calls are used ? Explain using an example for each. **10**

   (i)   htons ( )   (ii)   htonl ( )

   (iii) ntohs ( )   (iv)   ntohl ( )

3. Write an algorithm for TCP client and server each using the following specifications : **20**

(a) Client program initiate the communication. After authentication from the server, it sends a range of numbers (e.g. 10 to 100) to the server.

(b) TCP server, which can handle maximum 4 clients, accept the range of numbers from the client. As a reply it send a list of prime numbers (if any) to the respective client.

Note : Make suitable assumptions, if any.

4. (a) Compare and contrast between TCP/IP and   10
         OSI model. Also, draw the layer diagram
         for each model.

    (b) Write the step by step procedure to   10
         configure a Samba Server. Assume server
         IP address is 192.162.0.252 and server
         machine name is "IGNOU".

    Note :   Make suitable assumption for clients
              IP and name .

5. Differenciate between the following :   20

    (a) Gateways and Bridges

    (b) TCP and UDP

    (c) Authentication and Authorization

    (d) SOCK_STREAM ( ) and

         SOCK_DGRAM ( )

_____

No. of Printed Pages : 3 | **BCS-052**

BACHELOR OF COMPUTER APPLICATIONS
(Revised)
Term-End Examination
December, 2014

07264

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours   *Maximum Marks : 100*

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

1. (a) What is the maximum capacity of datagram that can be carried by Internet Protocol ? Also, explain how IP datagrams are deleted from the network. 5

   (b) What is meant by socket ? Write the differences between active and passive sockets. 5

   (c) Differentiate between ARP and RARP. 2

   (d) How does TCP handle "out-of-order" segments ? Explain. 5

   (e) What is the significance of the *"Time to Live"* value in an IP header ? Explain. 5

   (f) Explain the various components of a URL using an example. 5

(g) Why does lost acknowledgement not necessarily force the retransmission of TCP segment ? *5*

(h) Explain the Remote login process of TELNET. *5*

(i) What is the reserve bit pattern of the first byte for a Class D address ? *3*

2. (a) How is flow control managed in TCP ? Explain the Sliding Window Protocol using an example. *10*

(b) Explain the purpose of the following fields of the TCP and IP : *10*

   (i) Urgent Pointer

   (ii) Window Size

   (iii) Sequence Number

   (iv) Fragment Offset

3. (a) What is meant by Byte ordering ? For what purpose are the following functions used ? Explain using an example of each. *10*

   (i) htons

   (ii) htonl

   (iii) ntohs

   (iv) ntohl

(b) An IP address has arrived with the following first 16 bits of information in the header (binary format) as given below :

$$0100010101101101 \times \times \times$$

Answer the following :   *10*

  (i) What is the size of the header ?

  (ii) Are there any *options* ?

  (iii) What is the precedence of Datagram ?

  (iv) What type of service does this datagram contain ?

4. (a) Write the syntax and uses of "useradd" command in Linux.   *6*

  (b) Write an algorithm each for TCP client and TCP server, where the connection request from the client prompts the server to send the system date and time to the client for which the client will send an acknowledgement.   *14*

5. Write short notes on the following :   *20*

  (a) DHCP

  (b) VPN

  (c) HTTP

  (d) Voice over IP

BCS-052

BACHELOR OF COMPUTER APPLICATIONS (BCA) (Revised)
Term-End Examination
03783   **June, 2015**

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours   *Maximum Marks : 100*

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

1. (a) Do port addresses at transport layer need to be unique ? Why or why not ? Why are port addresses shorter than IP addresses ?   5

    (b) What is ARP ? How does it differ from RARP and BOOTP ? Explain.   5

    (c) Which field in IP header is used for congestion control and how ? Explain.   5

    (d) Draw the block diagram of DNS. Explain the purpose of various fields used in DNS message format.   7

    (e) In electronic mail, what is MIME ? Explain its purpose and functionality.   5

(f) How is checksum in TCP header computed ? Give an example to explain it. *5*

(g) Why is layering of the protocols done in TCP/IP stack ? *3*

(h) Differentiate between FAT 16 and FAT 32. *5*

2. (a) Explain the purpose and importance of the following header fields of TCP and IP protocols : *10*

(i) Protocol

(ii) Sequence Number

(iii) Version

(iv) Type of Service

(b) What is the purpose of byte ordering in network communication ? Also, write the functions used for byte ordering. *10*

3. Write an algorithm each for UDP client and UDP server with the following specifications : *20*

• Client should prompt a user to enter two numbers.

• Client program will send these numbers to the server.

• Server program will be able to handle many clients concurrently.

• Once server program receives the numbers, it will find the largest number and send it back to the respective client.

4. (a) What is the size of TCP header ? How many packets are exchanged in setting up a TCP connection ? **6**

(b) Identify the class of the following IP addresses : **4**

(i) 2.200.100.100

(ii) 130.10.120.240

(iii) 196.10.10.2

(iv) 208.10.18.203

(c) Write the syntax along with the parameters used by the following system calls : **10**

(i) accept ( )

(ii) listen ( )

(iii) send ( )

(iv) shutdown ( )

5. Write short notes on the following : **4×5=20**

(a) Network Monitoring Tools

(b) FreeNX

(c) Cloud Computing

(d) Name Servers

_____

No. of Printed Pages : 3   ☐➐➍➎➍   **BCS-052**

BACHELOR OF COMPUTER APPLICATIONS (BCA) (Revised)
Term-End Examination
December, 2015

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours   *Maximum Marks : 100*

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

---

1. (a) Assume a subnet mask 255.255.0.0 is assigned to an address of Class B. How many hosts are possible per subnet and how many subnets are possible ?   *5*

   (b) How does TCP handle out-of-order segment ? Explain the procedure with a suitable diagram.   *8*

   (c) The size of the option field of an IP datagram is 20 bytes. What is the value of HLEN field ?   *2*

   (d) Explain the Distance vector routing algorithm with an example.   *10*

(e) Explain the working of ARP and RARP using suitable diagram for each. *8*

(f) What is the importance of ICMP at Network layer ? Explain the reports generated by ICMP. *7*

2. Write an algorithm (using Socket Programing System Calls) for TCP client and TCP server each, as per the following specifications :

(Make suitable assumptions, if any) *20*

(a) Client will start communication and establish connection. It will send a list of numbers to the TCP server.

(b) TCP server, which can handle maximum 3 clients concurrently, will accept the list and send back the smallest number. Server will terminate this connection once the number is sent.

3. (a) How does a DNS server work ? Explain with help of a suitable example for recursive and iterative solutions. *10*

(b) What is SNMP ? Explain the different security levels implemented in SNMP. *10*

4. (a) What are the different remote network administration tools ? Explain the features of each. *10*

(b) Discuss the activities between DHCP server and DHCP client. *10*

5. Differentiate between the following : 20

    (a)   htons( ) and ntohs( ) System Call

    (b)   Supernet and Subnet

    (c)   read( ) and write( ) System Call

    (d)   Broadcasting and Multicasting
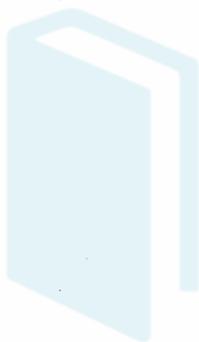
_____

No. of Printed Pages : 3 | **BCS-052**

BACHELOR OF COMPUTER APPLICATIONS (BCA) (Revised)
Term-End Examination
June, 2016

00676

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours   *Maximum Marks : 100*

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

1. (a) A block of address is granted to a small organisation. One of its addresses is 205.16.27.39/28. What is the first address in the block ?   5

   (b) Explain the management components of SNMP.   8

   (c) Explain the 'MAC Sub-layer format' and 'Addressing mechanism'.   8

   (d) Find the error, if any, in each of the following IPv4 addresses :   4

   (i) 111.56.036.89

   (ii) 226.14.8.5.3

   (iii) 75.14.14.14

   (iv) 111100.1110.111.001

(e) What is a DNS Server ? Differentiate between Primary and Secondary DNS Servers. *10*

(f) Differentiate between POP and IMAP. *5*

2. Draw the header of TCP and UDP. Compare the header fields of TCP and UDP. Explain the purpose of fields which are similar between TCP and UDP. *20*

3. (a) Why is remote administration needed ? Explain. *5*

(b) Explain the different components of a *Passwd* file in Unix/Linux. *5*

(c) Discuss the various Disk Management functions in Windows. Write the step-by-step procedure to open disk management option. *10*

4. Write an algorithm (using socket programming system calls) each for UDP client and UDP server, as per the following specifications : *20*

(a) UDP client will initiate the communication and send any alphanumeric character to the server.

(b) UDP server accepts that character and as a reply sends the ASCII value of that character to the client.

Note : Make suitable assumptions, if any.

BCS-052   2

5. Write short notes on the following : 20

    (a)   FTP

    (b)   Byte Ordering

    (c)   Gateways

    (d)   Distance Vector Routing
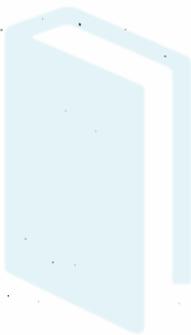
No. of Printed Pages : 3   **BCS-052**

BACHELOR OF COMPUTER APPLICATIONS (BCA) (Revised)

07475   **Term-End Examination**

December, 2016

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours   *Maximum Marks : 100*

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

1. (a) Write the limitations of classful addressing in IPv4. Also explain how these are improved by classless addressing.   5

   (b) What are ICMP messages ? Give the significance of ICMP messages.   5

   (c) What is the purpose of sequence number in a TCP segment ? Why is padding required for a TCP segment ?   5

   (d) Explain the structure of UDP datagram using a suitable diagram.   5

   (e) What is Virtual Private Network ? Compare VPN and FreeNX.   5

   (f) Compare and contrast between POP and IMAP.   5

(g) How do the layers of TCP/IP model correlate with the layers of OSI model ? Also explain the functions of OSI model which are not mapped in TCP/IP model. *10*

2. (a) Explain DNS in terms of namespace, resource record and name server. Also discuss its message format. *10*

(b) Explain the various UDP server side system calls and getsocket, setsocket functions. Also write their parameters. *10*

3. Write an algorithm each for TCP client and TCP server according to the following specifications : *20*

- TCP server can handle maximum 3 clients concurrently.

- TCP client will send a list of numbers to the server, after establishment of connection.

- TCP server will accept the list and return back to the client.

- After receiving the reverse list the client will send "Thanks" message to the server.

4. (a) Explain the methods of TCP used for avoiding network congestion. *6*

(b) Explain the working of DHCP with the activities performed between DHCP server and DHCP client. *8*

(c) Discuss the working of RARP. Also compare it with the working of ARP. *6*

5. Write short notes on the following :   *4×5=20*

   (a)   SNMP

   (b)   Raw Sockets

   (c)   Virtual Circuit

   (d)   Gateways
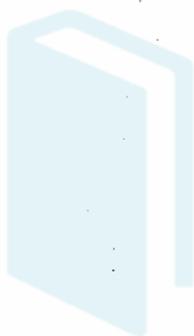
———————

No. of Printed Pages : 3　　　　　　　　　**BCS-052**

BACHELOR OF COMPUTER APPLICATIONS (BCA) (Revised)

03741　　**Term-End Examination**

June, 2017

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours　　　　　　*Maximum Marks : 100*

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

1.　(a)　Why and how is broadcasting used in Address Resolution Protocol ? Explain.　　5

　　(b)　Explain the differences between UDP data transfer and TCP data transfer.　　6

　　(c)　Why is Sliding Window Protocol used in transport layer ? Explain its working using an example when window size is of 5 bits only.　　8

　　(d)　What is HTTP ? Explain the methods used by HTTP for data transfer.　　5

　　(e)　Discuss the FTP connection mechanism between FTP Client and FTP Server.　　5

(f) Explain, why lost acknowledgement does not necessarily force the retransmission of TCP segment. 5

(g) Which command is used to display real-time running tasks in Linux ? Explain the significance of identified command using an example. 6

2. (a) What are the different remote administration tools ? Explain two features of each. 10

(b) Draw and explain the tree-way handshaking used by TCP for connection establishment and connection termination. 10

3. (a) Explain the purpose and importance of the following header fields of TCP and IP : 10

(i) Type of Service

(ii) Protocol

(iii) Header Checksum

(iv) Sequence Number

(b) Explain the concept of IP subnetting and supernetting with an example for each. 5

(c) Differentiate between SMTP and IMAP. 5

4. Write an algorithm for a UDP client and a UDP server for each of the following specifications :

- UDP client will initiate the communication and send the "Name of machine" to the server. *10*

- The server has a list of machine names and their corresponding passwords. After receiving the name, the sever will return back the corresponding password. *10*

5. Write short notes on the following : *4×5=20*

   (a) DNS

   (b) Network File System (NFS)

   (c) Byte Ordering

   (d) Distance Vector Routing

―――――――

No. of Printed Pages : 3 | BCS-052

BACHELOR OF COMPUTER APPLICATIONS
(BCA) (Revised)

02710   **Term-End Examination**

December, 2017

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours   Maximum Marks : 100

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

1. (a) Why is CIDR needed ? Explain with the help of an example.   5

   (b) Explain the working of ARP and RARP.   5

   (c) Explain the purpose of read( ) and write( ) system calls of data transfer.   5

   (d) What is count-to-infinity problem in Distance Vector routing ?   5

   (e) What are the basic messages used in SNMP protocol ? Explain.   5

   (f) Explain the symbolic notations of Traditional File permissions.   5

   (g) What is a Socket ? Differentiate between active and passive sockets. Explain with diagram.   5

(h) What is the purpose of Dynamic Host Configuration Protocol (DHCP) ? List activities between DHCP server and DHCP client. **5**

2. (a) Explain TCP connection set-up using three-way handshake, with the help of a diagram. **10**

(b) What are Primary and Secondary DNS servers ? How does the DNS server work ? Explain with the help of a diagram(s). **10**

3. (a) Explain the sequence of system calls to implement TCP client and server, using an appropriate diagram. **10**

(b) Define Unicasting, Broadcasting and Multicasting. **5**

(c) What are the qualities of service features in Internet Protocol ? **5**

4. (a) Discuss the tasks/services for which remote administration needs to be done. **10**

(b) Explain the following in the context of network security : **10**

(i) System Accounts

(ii) Managing Users

(iii) Managing Groups

(iv) Password Policy

5. Explain the following with the help of suitable examples/diagrams : **20**

(a) ICMP Messages

(b) Use of Type of Service (TOS) and Fragment Offset in IP Header

(c) Concept of Byte Order Conversion

(d) Stateless Operation and NFS Daemons in the context of Network File System

———

No. of Printed Pages : 3 | **BCS-052**

BACHELOR OF COMPUTER APPLICATIONS (BCA) (Revised)

Term-End Examination

03705 June, 2018

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours *Maximum Marks : 100*

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

1. (a) Explain the significance of "Type of Service" field in the header of IP datagram. 5

   (b) What is meant by flow control ? Explain any two methods used by TCP to manage flow control. 7

   (c) Why is "getservbyname( )" system call used in TCP/IP programming ? Write its syntax and different parameters taken by it. 5

   (d) Explain any five disk management functions used by the network administrator. 10

(e) Assume the following hexadecimal number as a TCP header sequence : *9*

> 05320017 00000001 00000000
> 500207FF 00000000

(i) What is the source port number ?

(ii) What is the sequence number ?

(iii) What is the acknowledgement number ?

(iv) What is the length of the header ?

(v) What is the type of the segment ?

(vi) What is the window size ?

(f) Explain any four methods used by HTTP for data transfer. *4*

2. (a) Explain TCP connection-establishment and connection-termination using 3-way handshaking, along with different segments used in the processes. Make a suitable diagram for each connection-establishment and connection-termination. *10*

(b) What is subnetting and supernetting ? Explain each with the help of an example. Also write the advantages of supernetting and subnetting. *10*

3. Write an algorithm each for TCP client and for TCP server to perform the following tasks : *20*

- TCP client establishes the connection with server.

- TCP client sends any three numbers to the server.

- TCP server responds back to the client by sending the smallest number.

- TCP server cannot handle more than four clients at a time.

Note : Make suitable assumptions, if any.

4. (a) Write the syntax of the following system calls along with the meaning of parameters used by them : *10*

   (i) bind()

   (ii) htons()

   (iii) connect()

   (iv) listen()

   (v) sendto()

   (b) What is Virtual Private Network (VPN) ? Write its advantages and disadvantages. Also compare VPN with Free NX. *10*

5. Write short notes on the following : *20*

   (a) Link State Routing

   (b) FAT16 and FAT32

   (c) SNMP

   (d) Cloud Computing

No. of Printed Pages : 3

BCS-052

BACHELOR OF COMPUTER APPLICATIONS (BCA) (Revised)

Term-End Examination

01973

December, 2018

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 hours   *Maximum Marks : 100*

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

1. (a) Assume Class B network uses 18 out of 32 bits to define a network address. How many Class B networks are possible in that case ? Give justification for your answer.   6

    (b) How does TCP manage "out-of-order" segment problem ? Explain through illustration.   6

    (c) Why does FTP use two TCP connections ? Also briefly explain the working of FTP.   5

(d) Explain the significance of the following header fields of IP datagram :   *8*

     (i)   HLEN

     (ii)   Time to Live

     (iii)   Identification

     (iv)   Flags

(e) Differentiate between POP and IMAP protocols.   *5*

(f) What is DNS ? Compare between primary DNS and secondary DNS.   *5*

(g) Describe the different security levels, implemented in SNMP.   *5*

2. (a) How is the "Disc User" checked in Linux ? Explain with the help of an example.   *5*

  (b) What are the data types defined by socket interface ? Also explain the purpose of any four.   *7*

  (c) Write any four differences between TCP/IP and OSI model. Also draw the layer diagram of each, showing the mapping of OSI and TCP/IP layers.   *8*

3. Write an algorithm for UDP Client and UDP Server with the following specifications : **20**

- UDP Client sends any alphanumeric character randomly to the UDP Server.

- UDP Server accepts the character and returns back the ASCII value of the character to the respective client.

4. (a) What is DHCP ? Explain the working of DHCP with the activities performed between DHCP Server and DHCP Client. **10**

   (b) Differentiate between ARP and RARP. With the help of suitable diagram, explain the working of each ARP and RARP. **10**

5. Write short notes on the following : **4×5=20**

   (a) ICMP

   (b) Sliding Window Protocol

   (c) Distance Vector Routing

   (d) Virtual Private Network

47122

No. of Printed Pages : 4 **BCS-052**

BACHELOR OF COMPUTER

APPLICATIONS (BCA) (REVISED)

Term-End Examination

June, 2019

BCS-052 : NETWORK PROGRAMMING AND

ADMINISTRATION

Time : 3 Hours *Maximum Marks : 100*

Note : Question No. 1 is compulsory. Attempt any three questions from the rest.

1. (a) What is Virtual Private Network (VPN) ?
   What are its advantages and dis-
   advantages ? Also, write differences between
   VPN and Free NX. 10

(b) Explain the working of ARP. Write similarities and differences between ARP and RARP.   10

(c) What is **SMTP** ? **Explain** the services offered by its components.   6

(d) Draw and explain how does TCP handle the lost acknowledgement segment and the corrupted segment.   8

(e) Explain the IP address classes. Also, indicate how many bits are used to represent the network ID and host ID part for these IP classes.   6

2. (a) Explain distance vector routing with the help of an example.   10

(b) What is DHCP ? Explain the working of DHCP with the activities performed between DHCP client and DHCP server. 10

3. Write an algorithm each for TCP client and TCP server based on the following specifications :   20

(i) TCP client will send a list of 10 numbers to the TCP server.

(ii) TCP server can handle maximum 4 client at a time. TCP server will find the smallest number from the given list and return to the respective client.

4. (a) Write the step by step procedure to configure a Samba server. Assume server IP address is 192.162.0.18 and server machine name is "BCA".   10

(b) Write the differences and similarities between TCP/IP model and OSI reference models.   10

5. Write short notes on the following :   5 each

   (a) Network File System (NFS)

   (b) Network Monitoring Tools

   (c) Cloud Computing

   (d) DHCP

178664

No. of Printed Pages : 4 **BCS-052**

BACHELOR OF COMPUTER
APPLICATION (BCA)

Term-End Examination

December, 2019

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) Explain the purpose of system call *"getservbyname*( )*"* used in socket programming. Also, explain its syntax and parameters taken by it. 5

(b) Discuss the cloud computing model. What are the advantages of cloud computing ?   6

(c) Explain the methods used by HTTP for data transfer. Give an example for each method.   6

(d) How does TCP handle out-of-order segments ? Explain the procedure with a suitable diagram.   8

(e) Compare connection-oriented and connectionless services using examples for each.   5

(f) The following is TCP header in hexadecimal format : $2 \times 5 = 10$

043721A9 16A02B12 7926AB21 6209A216

00346A2B

   (i)   What is the sequence number ?

(ii)   What is the destination port number ?

(iii) What is the source port number ?

(iv) What is the length of TCP header ?

(v)   What is the acknowledgement number ?

2.   (a)   How is the "Disc User" checked in Linux ? Explain with the help of an example.   5

(b)   What is the purpose of byte ordering in network communication ? Also, write the functions used by byte ordering.   10

(c)   Differentiate between RAT 16 and FAT 32.   5

3.   Write an algorithm for TCP client and server each using the following specifications :   20

•   Client program will send any random number to the TCP server.

- TCP server program will return "Yes" if the given number is a prime number else return "No" to the respective client.

4. (a) How does a DNS server work ? Explain with the help of a suitable example for recursive and iterative solutions. 10

   (b) What is the significance of SNMP ? Discuss the different security levels implemented in SNMP. 10

5. Differentiate between the following : 5 × 4 = 20

   (a) TCP and UDP

   (b) Broadcasting and Multicasting

   (c) IPv4 and IPv6

   (d) BOOTP and DHCP

No. of Printed Pages : 4   **BCS-052**

BACHELOR OF COMPUTER APPLICATION (BCA) (REVISED)
Term-End Examination
June, 2020

BCS-052 : NETWORK PROGRAMMING AND ADMINISTRATION

Time : 3 Hours   *Maximum Marks : 100*

Weightage : 75%

Note : (i) *Question No. 1 is compulsory.*

(ii) *Answer any **three** questions from the rest.*

1. (a) How is flow control managed in TCP ? Explain the sliding window protocol using an example.   **10**

    (b) Explain the purpose of the following fields of TCP and IP :   **10**

         (i)   Urgent Pointer

(ii) Window Size

(iii) Sequence Number

(iv) Fragment Offset

(c) Define a socket. Write its structure. List and explain *five* different types of socket options available.   10

(d) List and discuss at least *five* commands being used in LINUX for problem diagnosis and troubleshooting.   10

2. (a) What is remote administration ? Why is it required ? Identify and narrate some of the tasks/services for which remote administration is needed.   10

(b) With the help of a neat diagram, explain the UDP architecture.   10

3. (a) In a client/server architecture, explain the characteristics of a server program and also differentiate between sequential and concurrent server programs.   10

   (b) Define an Internet Control Message Protocol (ICMP). Mention whether it is connected or connectionless environment. List and explain any *four* commonly employed ICMP message types.   10

4. (a) What is a DNS server ? List and explain any *two* types of DNS servers. Write the step-by-step procedure to illustrate the recursive solution for a DNS server.   10

   (b) Explain Network File System (NFS) briefly. Further, with reference to NFS, write short notes on the following :   10

      (i)   Caching

      (ii) NFS Background mounting

      (iii) NFS Daemons

5. Write short notes on any *four* of the following :

                                                5 each

(a) Roles and responsibilities of a Network Administrator

(b) LINUX kernel management

(c) Disk security management

(d) Socket descriptor

(e) Simple Network Management Protocol (SNMP)

4280