Thapar Institute of Engineering & Technology, Patiala
Computer Science & Engineering Department
Auxiliary examination (March 2022)

B.E - III Year, Semester V (CSE & COE)   Course Code: UCS413
March 16, 2022, Wednesday, 5:30 PM   Course Name: Network Programming
Time: 2 Hours   Max Marks: 50
Name of Faculty: Dr. Surjit Singh, Dr. Sonu Lamba, Dr. Jayendra Barua, Dr. Ashima Anand
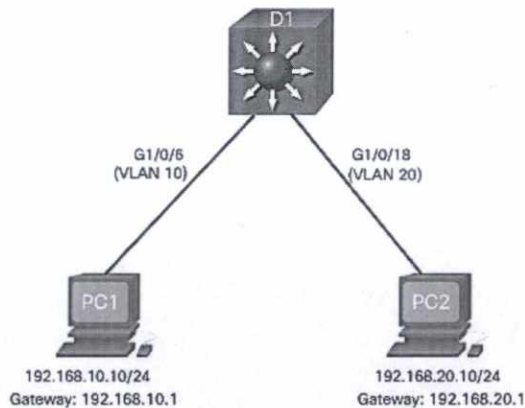and Dr. Tanya Garg

Instructions for students:
- Attempt any five questions. Assume suitable missing data, if necessary.
- Attempt all parts of a question together at one place.

Q. 1   a. What are First Hop DNS (FH DNS) servers? Why are these servers required in   **5 + 5**
DNS hierarchy?
Elaborate how FH DNS server will resolve the DNS query to find the IP address of
"www.results.exam.thapar.edu".

b. Explain the working of HTTP server. Also, form a HTTP client request and HTTP
Server Response for "www.networkprogramming.com" with default port: 80, file
index.html, http protocol and accepting text file in English language.

Q. 2   a. Explain the issue of collision domain and broadcast domain in networking. Also,   **5 + 5**
discuss the list of devices responsible for breaking collision domain and
broadcast domain with appropriate diagrams.

     b. Comment on the use of the following socket options
        i. so_linger
        ii. setsockopt
        iii. so_useloopback
        iv. ipv6_hoplimit

Q. 3   a. What is heterogeneous network? What is Type Length Value (TLV) and how   **5 + 5**
TLV is used to solve the issues of
        i.   Network heterogeneity
        ii.   Upgradation of selected machines in the network

b. Differentiate between the Little Endian and Big-Endian schemes to store the 16-
bit integer values. Support your answer with the help of an example.
Also, discuss the difference between htonl and htons.

Q. 4   a. What is Virtual LAN? How does it differ from LAN? Also, explain the benefits   **5 + 5**
of VLAN over LAN?

b. Explain stepwise procedure of VLAN routing for the following VLAN network.

G1/0/6
(VLAN 10)

G1/0/18
(VLAN 20)

PC1

PC2

192.168.10.10/24
Gateway: 192.168.10.1

192.168.20.10/24
Gateway: 192.168.20.1

Q. 5 How is SCTP different from TCP and UDP? **3 + 7**
Also, discuss the stepwise implementation of one-to-many SCTP socket for both
client and server using C programming.

Q. 6 Write a client and server program to create a chat model using TCP socket **5 + 5**
programming in connection- oriented Scenario.

Q. 7 Write short note on **5 * 2**
    a. htons and htonl
    b. Collision domain and broadcast domain
    c. Secure Socket Tunnelling Protocol
    d. Use of fork () for concurrent server
    e. Nagle Algorithm