MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL
(A constituent unit of MAHE, Manipal)

IV SEMESTER B.TECH. (COMPUTER AND COMMUNICATION ENGINEERING)
END SEMESTER EXAMINATIONS, APRIL/MAY 2019
SUBJECT: TCP/IP PROTOCOL SUITE [ICT 2254]
REVISED CREDIT SYSTEM
(04/05/2019)

Time: 3 Hours   MAX. MARKS: 50

Instructions to Candidates:

❖ Answer **ALL** the questions.

❖ Missing data if any, may be suitably assumed.

1A. List different topologies for geometric arrangement of components that make up the LAN. Also mention the pros and cons of each topologies. **5**

1B. How does the CSMA/CD detect the collision? Explain the algorithm with suitable diagram. **3**

1C. How does ICMP help in checking the connectivity between the devices and estimating the delay? **2**

2A. An organization is granted a block of addresses with the beginning address 14.24.74.0/24. The organization needs to have 3 subblocks of addresses to use in its three subnets as shown below:
  i.   One subblock of 120 addresses.
  ii. One subblock of 60 addresses.
  iii. One subblock of 10 addresses.
Design the sub blocks, mention first and last addresses in each block and find out how many addresses are still available after these allocations. **5**

2B. What is ARP? What are the different cases in which ARP is used? **3**

2C. Why does TCP/IP protocol suite use different levels of addresses? What are those addresses? **2**

3A. What are special IP addresses? What is the use of each special address? Give example for each. **5**

3B. How does NAT help in a communication? How did it evolve to current table format? **3**

3C. Calculate and show the values for following cases of UDP datagrams.
  i.   What is the minimum size of a UDP datagram?
  ii. What is the maximum size of a UDP datagram?
  iii. What is the minimum size of the process data that can be encapsulated in a UDP datagram?
  iv. What is the maximum size of the process data that can be encapsulated in a UDP datagram? **2**

4A. A TCP opens a connection using an initial sequence number (ISN) of 14,534. The other party opens the connection with an ISN of 21,732.

    i.   Show the three TCP segments during the connection establishment.

    ii.   Show the contents of the segments during the data transmission if the initiator sends a segment containing the message "Hello dear customer" and the other party answers with a segment containing "Hi there seller."   **5**

4B. If an old acknowledgement number is 506 and last advertised receiving window size is 15 and new acknowledgement number is 510 and new advertised receiving window size is 10, what will be the status of sending window (close, open or shrink)? Justify.   **3**

4C. State whether the following statement is right or wrong. "DNS uses the services of TCP". Justify your answer.

    2

5A. Which transport layer protocol is suitable for the following applications? Justify:

    i.   Email

    ii.   Downloading movie

    iii. Live streaming of video

    iv. Video Conferencing   **5**

5B. Explain the congestion control policies used in TCP?   **3**

5C. What are the different policies to share the routing table in Distance Vector Routing?   **2**