VIT

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

Winter Semester 2019-20

CAT-1

D2+TD2 Slot

Course Name: Network and Communication   **Course Code: CSE1004**

Duration   : 90 minutes   **Max. Marks : 50**

Answer all the questions (5 X 10 = 50)

1. Compare and Contrast the TCP/IP and OSI Reference Model and discuss the key factors of TCP/IP Protocol suite. [CO1] (10)

2. i) You have two computers connected by an Ethernet hub at home. Is this a LAN, a MAN, or a WAN? Explain your reason. [CO1] (5)

2. ii) Discuss in detail the various factors that affect the performance of the data communication networks. [CO1] (5)

3. i) The following figure shows a routing table of a switch in a virtual- circuit network. [CO2] (5)

Destination address	Output port
1233	3
1456	2
3255	1
4470	4
7176	2
8766	3
9144	2
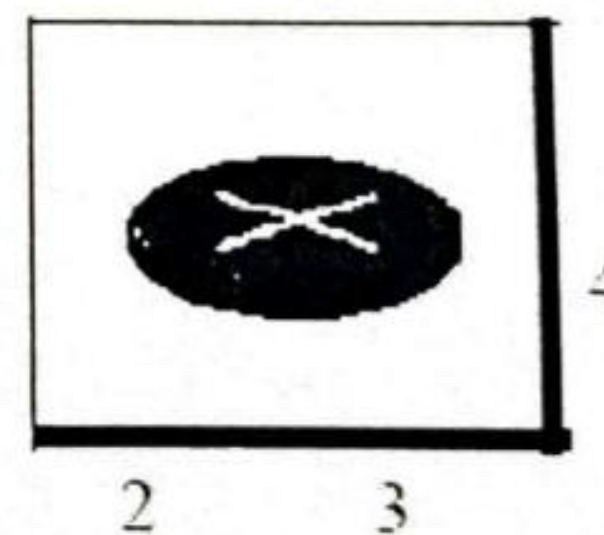
Find the output port for packets with the following destination addresses:

Packet 1: 7176 Packet 2: 1233 Packet 3: 8766 Packet 4: 9144

3. ii) Can a Circuit switch will be used for digital data communication. Justify your answer with suitable technique and example [CO2] (5)

4. i) Write down the steps involved in finding CRC at both sender and receiver side. Differentiate between backward error correction and forward error correction techniques. [CO3] (4)

4. ii) Sixteen-bit messages are transmitted using a Hamming code. How many check bits are needed to ensure that the receiver can detect and correct single-bit errors? Assuming an even parity show the bit pattern transmitted for the message 1101001100110101. How does the receiver finds whether the received code word has an error or not. [CO3] (6)

5. i) Consider a user is downloading 1MB audio file as a 32 bit sequence from a FTP server as follows: 10011001011101100001010100001001
Engrave the steps involved at the sender side checksum calculation by assuming each *segment is of 8 bits*. Assume that the bits at odd positions in each segment are garbled due to imperfection in the medium. How the receiver does detects that there is error in the received or not. [CO3] (5)

5. ii) Describe the key differences between circuit switching, packet and virtual circuit switching networks. [CO2] (5)