VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Continuous Assessment Test I- Jan 2023

| Programme	: B.Tech (CSE and its Specializations)	Semester	: WIN 2022-2023
Course Title	: Computer Networks	Code	: BCSE308L
		Slot	: F2+TF2
Faculty	: Dr. KANCHANA DEVI V, Dr. SUBBULAKSHMI P, Dr. RADHA R, Dr. N G BHUVANESWARI, Dr.BHAVADHARINI R M, Dr. DINAKARAN M	Class Nbr	: CH2022235000747, CH2022235000726, CH2022235000748, CH2022235000742, CH2022235000750 CH2022235000737
Duration	: One and a Half Hours	Max. Marks	: 50

Answer all the Questions

1. Rohini wants to send an email to her friend Sabhana. Email reaches Sabhana in a layered approach. Discuss in detail about the functionalities of each layer involved. **10**

2. a. Three Local Area Networks (15 Computers in each LAN) have been arranged using Star, Mesh, Bus, and Ring topologies in different locations.
       i. For each of the above-mentioned networks, discuss the consequences of any connectivity failure at any point of the network. [3 Marks]
       ii. Calculate the total number of connections in each network. [2 Marks]

   b. As a lab coordinator, you need to propose the physical structure of the network in a computer lab with 100 computers. Find out an appropriate network topology for each criteria mentioned below with justification. [5 Marks] **10**
   - Low Delay
   - High Fault tolerance
   - Cheap Cost in terms of number of cables
   - High Reliability
   - Scalability

3. Assume that you are communicating with your friend using a virtual circuit network. Discuss the steps involved in resource allocation for making the communication and explain the disadvantages. **10**

4. a. Assume that two hosts X and Y are separated by 50 kilometers and are connected by direct link of 2Mbps. X sends a file of 600000 bits to Y and the propagation speed over the link is 2×10^6 meters/sec. What is the maximum number of bits that will be in the link at any given time? [4 Marks] **10**

   b. Consider the following network switches s1, s2, s3, s4, s5. Switch ports are numbered from 0,1,2,3 and A, B, C, D, E, F, G are the end devices connected to the network.
   Three virtual circuits (A to F, B to F, B to G) for the end devices along with VCI numbers are given below:

A – 4 – S1—6—S2—4—S5—5—F
B—7—S3—5—S4—8—S2—6—S5—10—F
B—9 –S3—22—S1—11—S2—15—G

Show the VCI table for switch S2. [6 Marks]
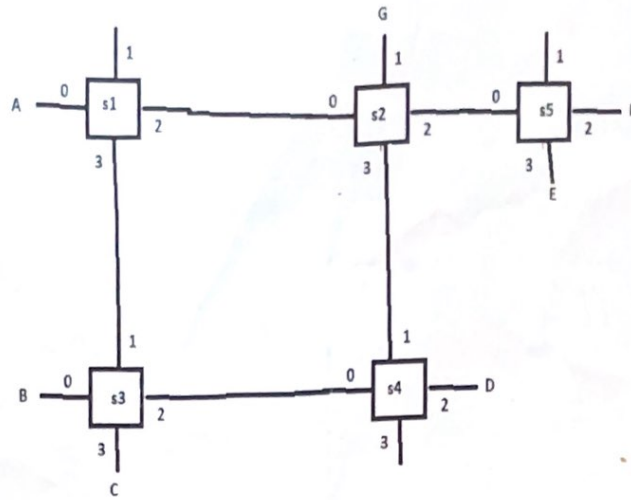
a) Assume that you are setting up a private network and you need to decide on the appropriate switching method with justification for the following cases. [6 Marks]

    i.   Applications transmit huge data at uniform rates for a long-time duration.

    ii.   Applications transmit huge data at highly variable rates for short to medium time durations.

    iii.   Applications transmit small data at uniform rates for a long-time duration.

10

b) A signal travels from point A to point B. At point A, the signal power is 80 W. At point B, the power is 60 W. What is the attenuation in decibels? [4 Marks]

$$dB = 10 \log_{10} \frac{P_2}{P_1}$$

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