Reg. No.: [redacted]

Name :

VIT

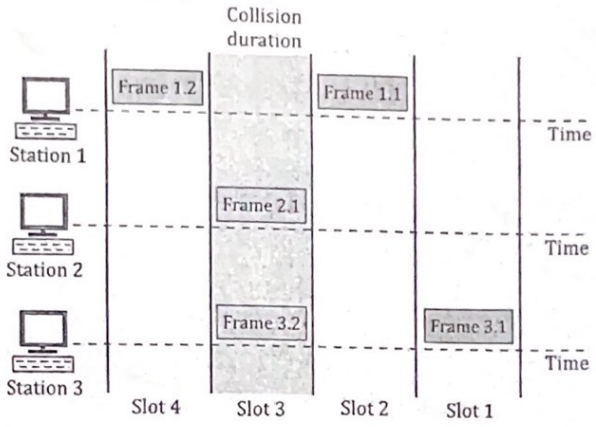
Vellore Institute of Technology

Continuous Assessment Test II- March 2023

Programme	:	**B.Tech (CSE and its Specialization)**	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	:	**90 min**	Max. Marks	:	**50**

Answer all the Questions

1. Consider the given figure. Three devices want to transmit their information using a common transmission medium without any collision. But, during data transmission collision happens as shown in the given figure.



i. Find out the type of protocol used in the above figure. Also, state the reason for the collision. [4 Marks] ALOHA

ii. Suggest an alternative protocol that can reduce the rate of collision. Elucidate the same in detail with a diagram. [6 Marks] CSMA

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2. i. Identify the suitable number of redundant bits required for a Hamming code error correction technique in 7 bits data word. Discuss the same with appropriate reasoning, why another number of redundant bits is not suitable. [3 Marks]

ii. Compute the Code Word for the given Data Word 1110110 using Hamming Code Technique. [7 Marks]

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3. The details of an IP header at the sending side are as follows: 4500 006A 0012 0000 3206 744C 90B8 0010 7C08 0760.

If suppose the destination address is changed to 10B7 20A3, construct the new IP header with an updated checksum.

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i. Determine, if the following devices A & B are on the same subnetwork or different subnetworks. [2 Marks]

Device A: 152.16.49.30/20
Device B: 152.16.60.15/20

ii. Assume that you are given the role of assigning given IP addresses (140.12.160.0/22) for 8 computer laboratories in VIT. Answer the following. [8 marks] **10**

a. Find the subnet mask. [1 Mark]
b. Find the number of addresses in each subnet. [1 Mark]
c. Find the first and last addresses in subnet 1. [2 Marks]
d. Find the first and last addresses in the last subnet. [2 Marks]
e. If the last subnet is divided into two halves, find the first and last addresses in both partitions. [2 Marks]

9. An ISP is granted a block of addresses starting with 156.10.0.0/16. The ISP wants to distribute these blocks to 1000 customers as follows. **10**

- The first sub-block has 250 customers; each needs 128 addresses.
- The second sub-block has 250 customers; each needs 32 addresses.
- The third sub-block has 500 customers; each needs 4 addresses.

i. Design the sub-blocks and give the slash notation for each sub-block. [8 Marks]
ii. Find out how many addresses are still available after these allocations. [2 Marks]

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