VIT
Vellore Institute of Technology

SLOT - B2

SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING

CONTINUOUS ASSESSMENT TEST – II

WINTER SEMESTER 2019-2020

Programme Name & Branch: B.Tech - Information Technology (IT)

Course Code: ITE3001

Course Name: Data Communication and Computer Networks

Faculty Name: Dr. G. RAJARAJAN

Class Number: VL2019205004501 **Exam Duration:** 90 mins **Maximum Marks:** 50

General instruction(s): **Exam Mode: OPEN NOTE-BOOK ONLY**

Answer ALL Questions.

Sl.No.	Question	Marks (M)
1. (a)	Assume a system uses stop-and-wait ARQ protocol. If each packet carries 1000 bits of data over the bandwidth of 1Mbps. Find the total delay involved in transferring 1000 frames if the distance between the sender and the receiver is 5000 Km and propagation speed is $2*10^8$ m/s. (Also assume, there is no data or control frame is lost or damaged).	(6M)
1. (b)	Using 5 bit sequence numbers, what is the maximum size of sender and receiver window for each of the following protocols? (a). Stop and Wait ARQ (b). Go-Back-N ARQ (c). Selective Reject ARQ 16	(4M)
2. (a)	Among Pure Aloha, Polling, CDMA, Which is preferable and why? Justify your answer with valid explanation and supporting diagrams.	(6M)
2. (b)	Let us assume a network using CSMA/CD. The Round Trip time is estimated as 10ms over the bandwidth of 100KB/sec. Find the minimum length of transmission wire such that it can detect the collision, if any.	(4M)
3.	An organization is granted the block 130.56.0.0/16. The administrator wants to create 256 subnets. (a). Find the subnet mask for all Subnets. (b). Is it FLSM or VLSM? Why? (c). Find the number of hosts in each subnet and represent it in CIDR representation. (d). Find the first and last address in subnet 1 (e). Find the first and last address in subnet 1024	(10M)
4. (a)	An ISP has a block of 1024 addresses. It needs to divide the addresses among 1024 customers. Does it need subnetting? Justify your answer with valid reason.	(5M)

4. (b)	Suppose an organization is using class C addressing. It is well known that the number of available IP addresses per network in Class C is 256. But in real-time implementation, that organization is able to make use of only 254 IP addresses instead of 256 IP addresses. Why? Justify with valid reason and example.	(5M)
5. (a)	Write a pseudo code for bi-directional stop and wait ARQ at sender side as well as receiver side.	(5M)
5. (b)	Let us assume there are four stations (N1, N2, N3, and N4) want to access the channel simultaneously through Code Division Multiple Access. At a time t1, N1 is sending a bit 0; N2, N3 is sending a bit 1; N4 is idle. The Code for N1: [+1 +1 +1 +1] The Code for N2: [+1 -1 +1 -1] The Code for N3: [+1 +1 -1 -1] The Code for N4: [+1 -1 -1 +1] Now N4 wants to find what the data is being sent by rest of the nodes. How will it calculate and get the correct transmitted message?	(5M)