



VIT

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

REG.NO.:

SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTEMS
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2025-2026

SLOT: B1+B1

Programme Name & Branch : B.Tech-IT
Course Code and Course Name : BITE305L – Computer Networks
Faculty Name(s) : Dr.VIJAYAN R, Dr. M. PRIYA, Dr. USHA DEVI G
Class Number(s) : VL2025260103129, 3125, 3122
Date of Examination : 06-10-2025
Exam Duration : 90 minutes **Maximum Marks: 50**

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes
CO3. Identify and analyze data link layer error, flow control, and MAC issues.
CO4. Develop multiple options for host to network addressing, managing sub networks and internetworking.

Q. No	Question	M	CO	BL
1.	In the Selective Repeat ARQ protocol, suppose frames through 0 to 4 have been transmitted. Now, imagine that frame 0 time out, frame 5 (a new frame) is transmitted, frame 1 time out, frame 2 time out, and frame 6 (another new frame) is transmitted. a) Construct a sender window at every step for the transmission of frames. b) At this point, what will be the outstanding packets in the sender's window?	10	3	5
2.	NetShare is one of the best ISP for the northern region. SoftBiz company has acquired 65536 address with site address as 134.133.0.0. SoftBiz needs to manage their network with 500 subnets. Being a network expert can you analyse the situation and suggest the subnet mask, host count per network, and design the first four and last four subnets with network address and broadcast address?	10	4	4
3.	Assume that you have been appointed as a network administrator for the NetShare ISP Company. Your company was allocated the IP address of 155.156.0.0/16. Your company requires planning minimum of 3 groups of sub service providers with the following details. a. Group 1 has 32 customers, each customer requires 1024 addresses. b. Group 2 has 16 customers, each customer requires 512 addresses. c. Group 3 has 08 customers, each customer requires 256 addresses. Being the network administrator of the ISP service provider, design the sub-blocks of your company with proper range and slash notation representation, and identify the subnet mask of each group. Also, identify the remaining IP address to be used.	10	4	5



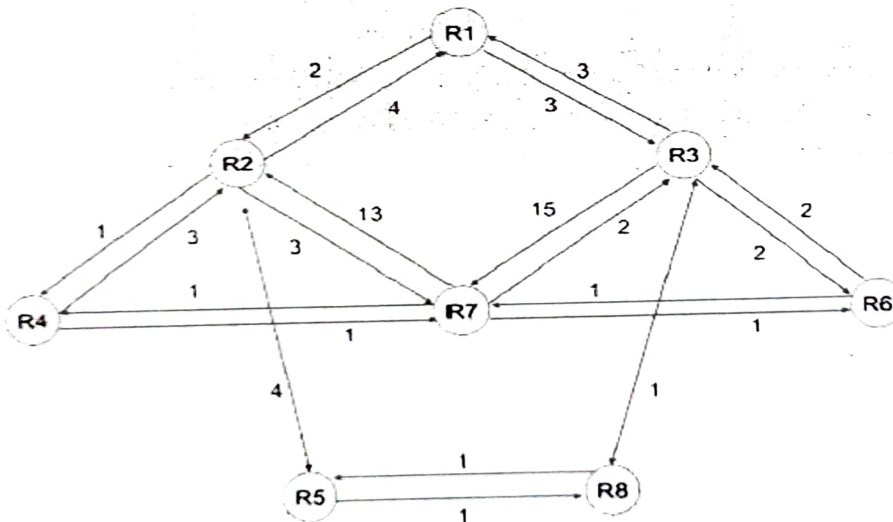
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4. a) An IPv4 datagram has arrived with the following information in the header (in hexadecimal):
45 00 05 dc 28 a3 20 00 80 01 93 f2 0a 1f 20 f4 0a 0a 23 6f
- Are there any options?
 - Is the packet fragmented?
 - What is the D and M flag bit?
 - What is the size of the data part?
 - Find the protocol type of this packet?
 - How many more routers can the packet travel to?

4. b) Suppose a TCP message that contains 5080 bytes of data and 20 bytes of TCP header is passed to IP for delivery across two networks interconnected by a router (i.e., it travels from the source host to a router to the destination host). The first network is Ethernet; the second is X.25. Each network's MTU gives the size of the largest IP datagram that can be carried in a data-link-layer frame. Find the identification, total length, D bit, M bit and offsets of the sequence of fragments delivered to the network layer at the destination host. Assume all IP headers are 20 bytes

5. Consider the network of eight routers below, with edge weights labelled



Show how the step-by-step operation of the Distance Vector routing algorithm works for the router **R1** by computing an iteration table. Compute the Shortest Path tree for router **R1** and the routing table entries in each router.
