



# VIT

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

REG.NO.: 23BEC0309

SCHOOL OF ELECTRONICS ENGINEERING (SENSE)  
CONTINUOUS ASSESSMENT TEST - I  
WINTER SEMESTER 2025-2026

SLOT: C1+TC1

Programme Name & Branch : B. Tech ECE  
Course Code and Course Name : BECE401L - Computer Communications and Networks  
Faculty Name(s) : Dr RENUGADEVI, Dr NANDAKUMAR S, Dr. RAVI KUMAR C V, Dr. NAVEEN MISHRA  
Class Number(s) : VL2025260500825/828/831/833  
Date of Examination : 29-1-2026  
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
  - CO1- Discuss the concepts of TCP/IP reference model.
  - CO2- Apply the spanning tree algorithm in internetworking devices.
  - CO3- Analyze ARQ protocols in error control and medium access control.

| S.No | Questions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Max Marks | CO | BL |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----|----|
| 1    | <p>i) Match the following to one or more layers of the OSI model</p> <ul style="list-style-type: none"><li>a) Signal modulation and bit rate control</li><li>b) Converting EBCDIC to ASCII</li><li>c) Breaking data into segments and sequencing</li><li>d) Email Services</li><li>e) IPv4, IPv6</li><li>f) Ethernet</li></ul> <p>ii) Comment on which transport layer protocol would be appropriate to use in each of the following applications and indicate why.</p> <ul style="list-style-type: none"><li>a. Transferring an audio stream, for which some packet losses are affordable, but real-time delivery is important.</li><li>b. Performing a web-browser application (e.g. money transfer on the webpage of your bank), for which promptness is not crucial, but packet errors/losses are fatal.</li></ul> | 6+4       | 1  | 2  |
| 2    | <p>Six stations (S1-S6) are connected to an extended LAN through transparent bridges (B1, B2 and B3), as shown in Figure 1. Initially, the forwarding tables are empty. Suppose the following stations transmit frames: S1 transmits to S5, S5 transmits to S1, S4 transmits to S3, S3 transmits to S4, S2 transmits to S5 and S5 transmits to S2.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 10        | 2  | 3  |

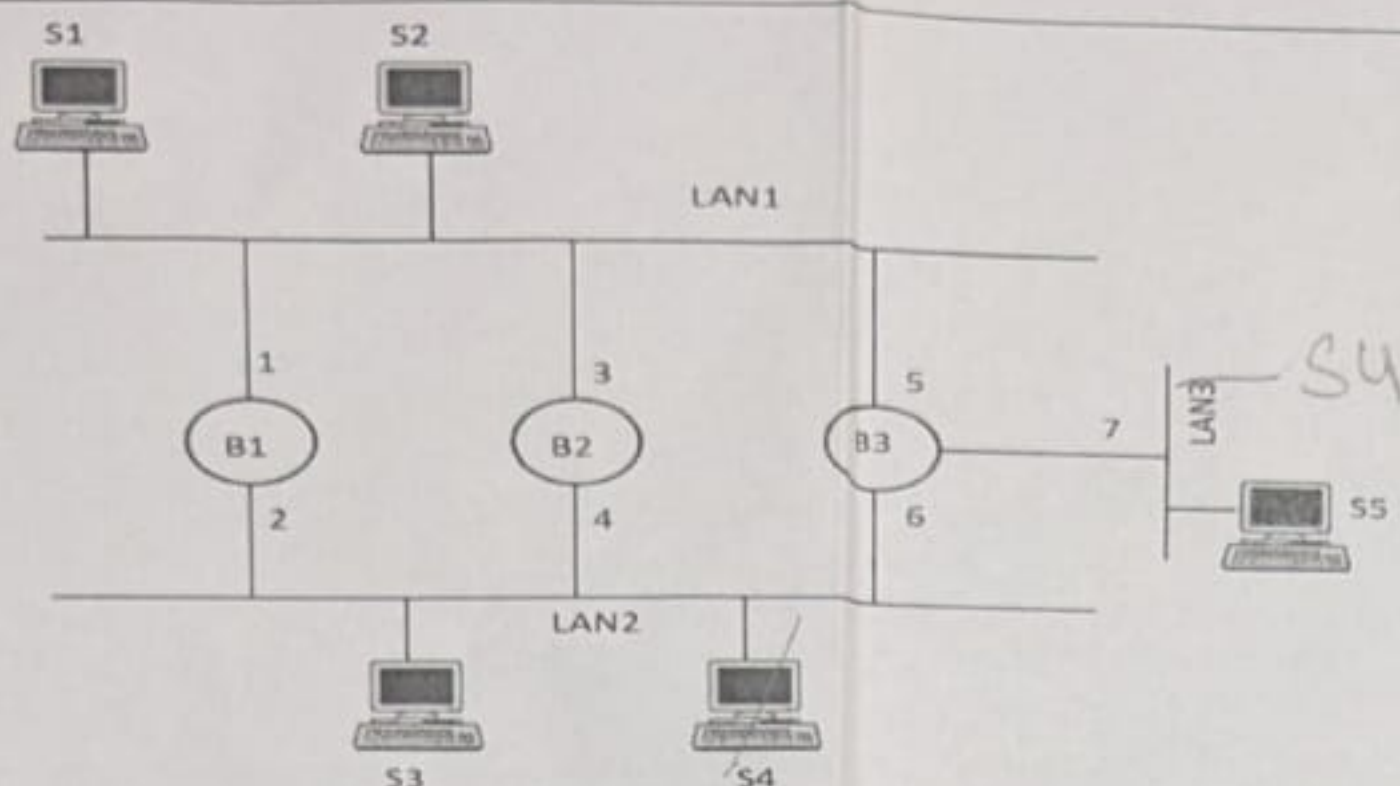


Figure 1

- i. Fill in the forwarding tables with appropriate entries and denote the action carried out by the bridge after every frame transmission.
- ii. Assume S4 has been moved from LAN 2 to LAN 3. Mention the changes in the forwarding table entries of the bridges when S4 transmits to S1 and S1 transmits to S4.

- 3 Write the Spanning tree algorithm and determine the spanning tree for the bridged LAN shown in Figure 2. Assume that LANs 2, 4 and 5 are Gigabit Ethernet LANs (Cost = 4) and the rest are Fast Ethernet LANs (Cost=19). MAC address of the bridge is represented in hexadecimal form. Bridge ports are indicated as 1,2,3 etc., Suppose S1 wants to send a frame to S3 but has not learned the route. Sketch the route followed by the single route frames during route discovery.

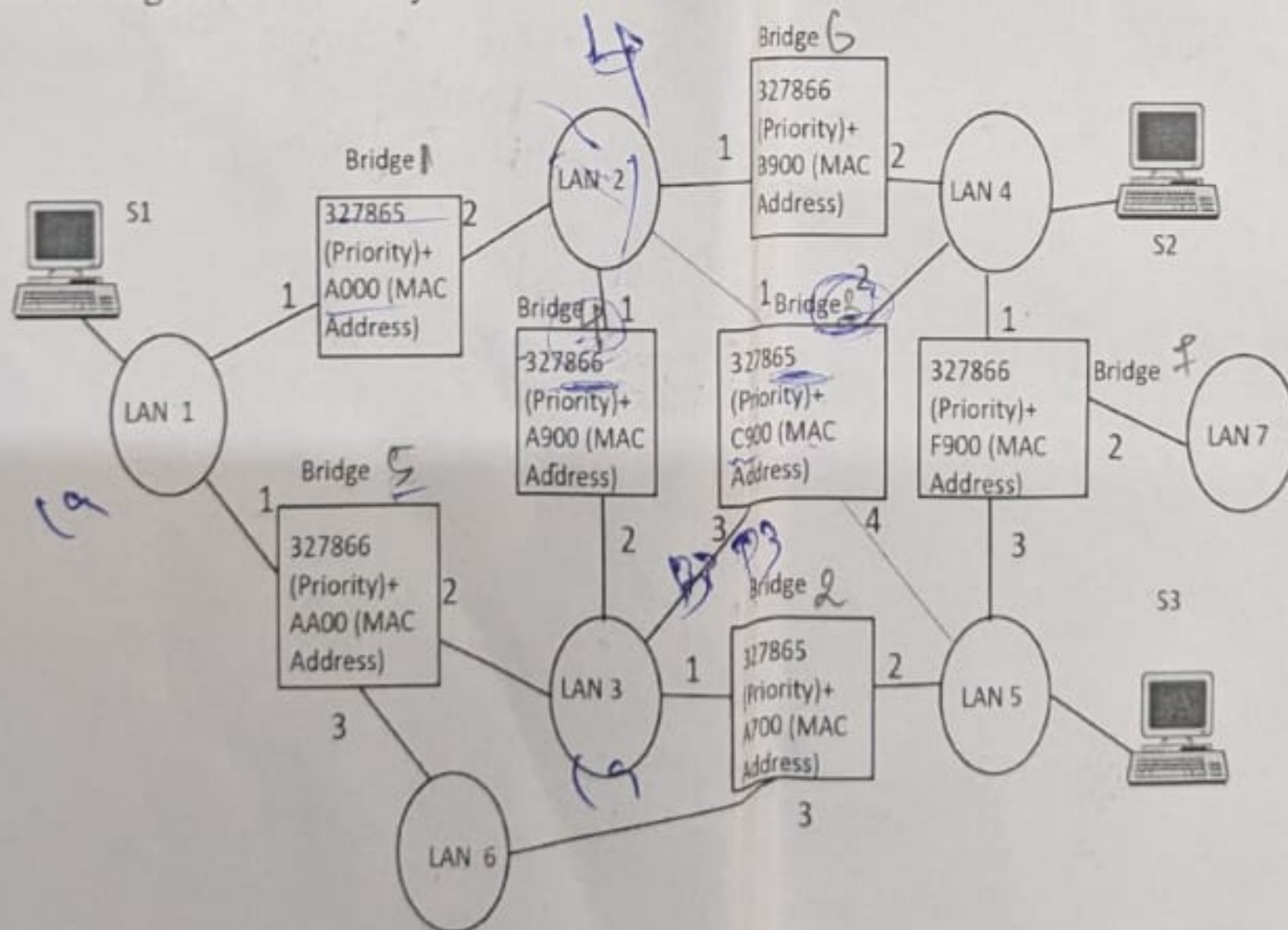


Figure 2

- 4 Given the data word 1010011110 and the divisor  $X^4 + X^2 + X + 1$ . Find the codeword generated at the sender end using binary division.
- 5 Why do reliable data transfer protocols need sequence numbers? How many unique sequence numbers does Stop-and-Wait protocol need? How many bits are needed to represent Stop-and-Wait's unique sequence numbers?