



VIT

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School of Electronics Engineering
Fall Semester 2024-25
Continuous Assessment Test - I

Programme : B.Tech (ECE)
Course Name : Computer Communications and Networks
Class Nbr: VL2024250102836
Session : 2

Faculty members: Dr. Rohit Mathur

Course Code : BECE401L
Slot : C2+TC2

Date of Exam: 27 Aug 2024

Q.N

o

Question

Max

Marks

1

i) Identify and write the OSI layer name for the following operations:

- Provides independence from differences in data representation.
- HTTP, and SMTP.
- Routing.
- Reliable end to end Process.
- optical transmission media.
- Breaking a transmitted bit stream into frames.

ii) Categorize the following types of networks as LAN, MAN, WAN, or interconnection of WAN

Network Description

- Infosys data center in London and branch centers at Asia, Europe, and North America.
- A Professor office consisting of two workstations and one printer.
- A city traffic control system managed by a network of 700 computers
- A Campus network consisting of about 500 computers

6+4

2

Design a Hybrid network of 12 computers in which half of computer are in star and rest are in ring topologies. Also write advantage and disadvantages of these topology.

5

3

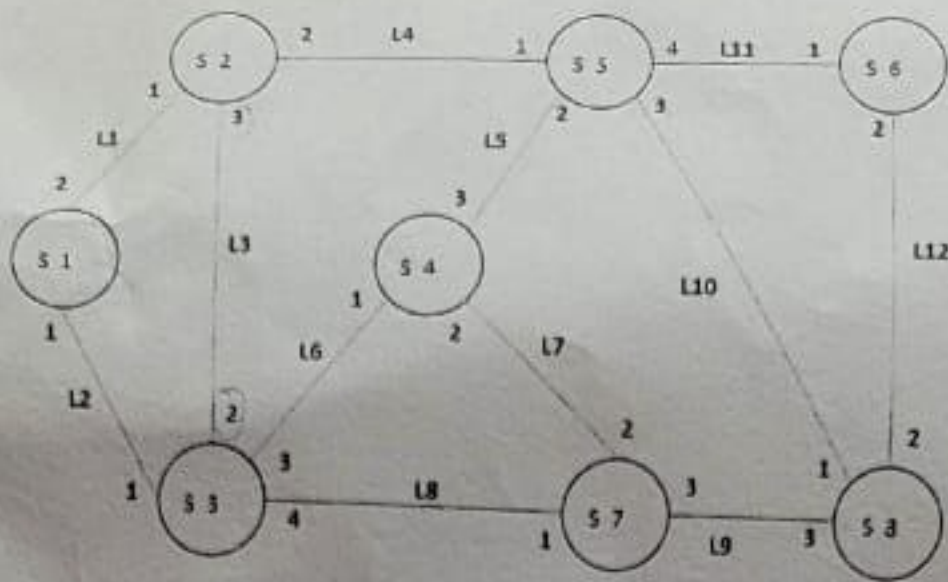
Write the spanning tree algorithm. Compute and draw the spanning tree and label the root switch, root ports, designated ports and block ports for the following switched LAN. Assume that LANs 1, 3, 5, 7 and 11 are Gigabit Ethernet (Cost=15) and the rest are Fast Ethernet (Cost=19). Switches are labelled with S1, S2, etc. Use the LAN costs to determine the least cost path.

NOTE 1: Numerical values 1, 2, 3, etc. indicates the port number of each switch.

NOTE 2: MAC address is represented in hexadecimal form.

Switch Number	Switch ID (Priority + MAC address)	Switch Number	Switch ID (Priority + MAC address)
S1	32785 + AB00	S5 ✓	32785 + A300
S2	32786 + A900	S6	32786 + A400
S3	32785 + A700 ✓	S7	32785 + B700 ✓
S4	32786 + A200	S8	32786 + C000

15



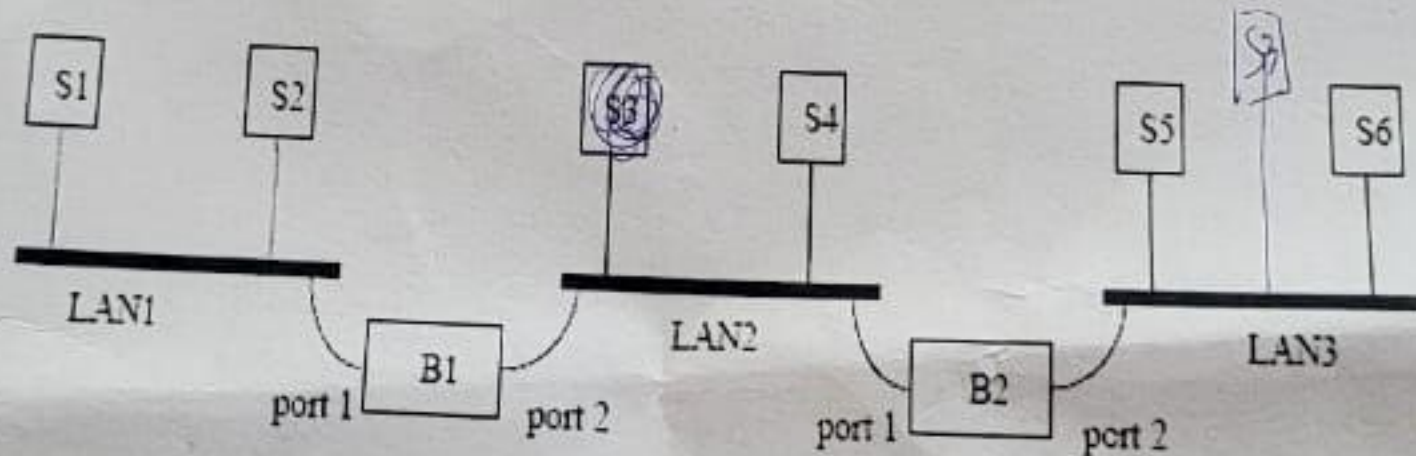
4 Six stations (S1-S6) are connected to an extended LAN through transparent bridges (B1 and B2), as shown in Figure. Initially, the forwarding tables are empty. Suppose the following stations transmit frames as follows.

- S1 transmits to S5
- S6 transmits to S1
- S5 transmits to S2
- S3 transmits to S1
- S4 transmits to S6

Let station S3 is moved to LAN3

- S3 transmits to S4
- S2 transmits to S1
- S4 transmits to S3
- S5 transmits to S1
- S4 transmits to S3

Fill in the forwarding tables with appropriate entries and function after the frames have been completely transmitted.



5 A sender needs to send 'OSIMODEL' to a receiver.

- Find the checksum at the sender site.
- Find the checksum at the receiver site for the following case due to the channel error: D is detected as O

Hint: ASCII Code is represented in hexadecimal for 'O' is 5A, 'S' is 56, 'I' is 49, 'M' is 54, 'D' is 55, 'E' is 4E and 'L' is 43.