VIT
Vellore Institute of Technology

REG.NO.:

SLOT:F1+TF1

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

Programme Name S Branch : **B.Tech Computer Science and Engineering**
Course Code and Course Name : **BCSE308L - Computer Networks**
Faculty Name(s) : **ALL**
Class Number(s) : **ALL**
Date of Examination : **10.10.2025 AN**
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
  CO 3. Identify and analyze error and flow control mechanisms in data link layer.
  CO 4. Design sub-netting and analyze the performance of network layer with various routing
  protocols.

Q. No	Question	Module	Marks	CO
1.	a) Slotted ALOHA network transmits 300-bit frames using a shared channel with a 300-kbps bandwidth. Find the frame transmission time and throughput if the system (all stations together) produces. (i). 2000 frames per second when G=1 (ii). 700 frames per second when G=1/2 (iii). 650 frames per second when G=1/4	3	5	3
	b) Consider the bandwidth of the channel is 2 Mbps, propagation is 22.5 msec and packet size is 1 KB, then find the total time, link efficiency and throughput in stop and wait protocol.		5	
2.	An Internet Service Provider (ISP) is granted a block of addresses starting with 198.60.4.0/24. The ISP wants to distribute these blocks to 3 organizations with each organization receiving 12 addresses, 25 addresses and 50 addresses. Design the sub-blocks and give CIDR notation for each organization. Find out how many addresses are still available after these allocations.	4	10	4
3.	a) A university campus network currently operates on IPv4, but due to the rapid increase in IoT devices (smart sensors, cameras, and student mobile devices), the IT team is considering migrating to IPv6. (i) Compare and contrast IPv4 and IPv6 in terms of address space, configuration, header structure, broadcast, security, and efficiency. (ii) In this scenario, explain the problems with continuing IPv4 and the advantages of migrating to IPv6. (iii) Conclude with a recommendation for the campus network.	4	5	4
	b) Find the class of each address from and show its corresponding subnet mask. (i). 01000001 00001011 00001011 11101111 (ii). 11110001 10000011 00011011 11111111		5	

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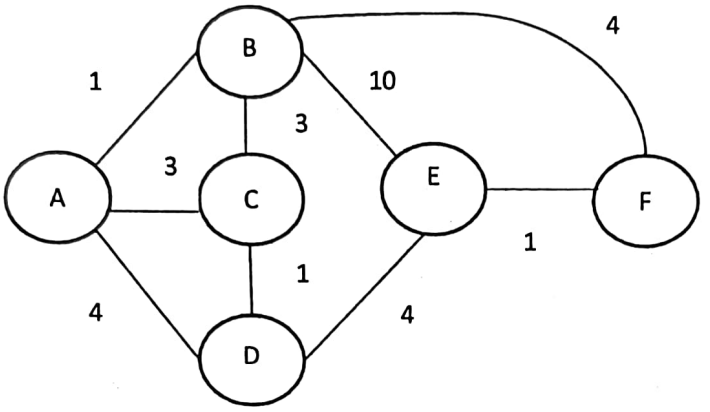
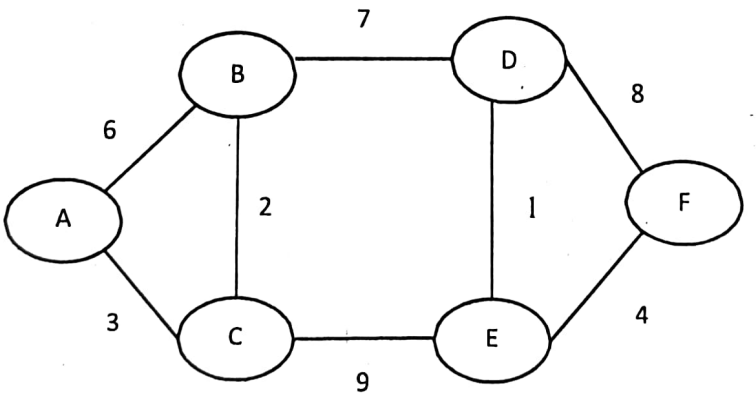
	(iii). 126.23.120.8 (iv). 190.5.15.111 (v). Find the error, if any, in the following IPv4 addresses 11101011.5.15.8 and explain it.			
4.	Consider a network shown in below figure. Compute least cost path from router F to all destination using Dijkstra's algorithm. Explain the process. 	5	10	4
5.	Consider a network which consists of 6 nodes. Each node in the network is represented as router. Each router maintains routing table indicating next hop router to be used to relay the packet to its destination. All routers in the network uses the Bellman Ford Algorithm to update their routing table. Compute least cost path from one router to another router. 	5	10	4

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