



VIT

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

REG.NO.:

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2024-2025

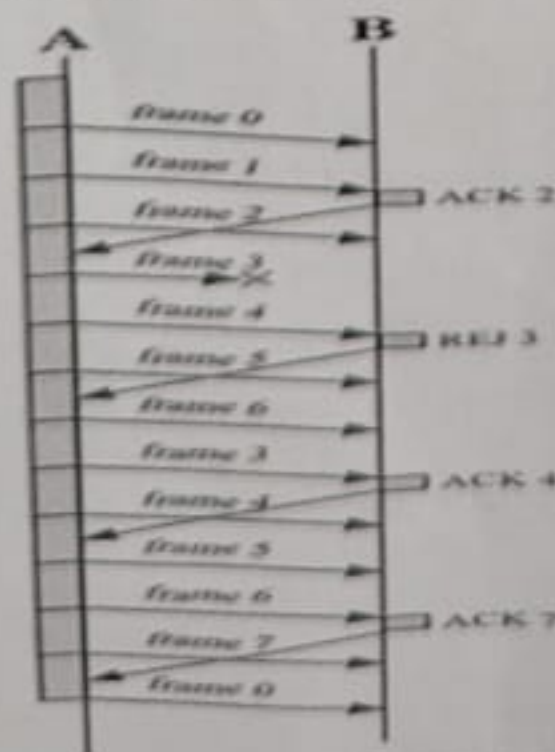
SLOT: E2+1.

Programme Name & Branch : M. Tech Integrated (CSE & Specializations)
Course Code and Course Name : CSI2007 and Data Communication and Networks
Faculty Name(s) : Common for all
Class Number(s) : Common for all
Date of Examination : 20-03-25
Exam Duration : 90 minutes Maximum Marks: 50

General instruction(s):

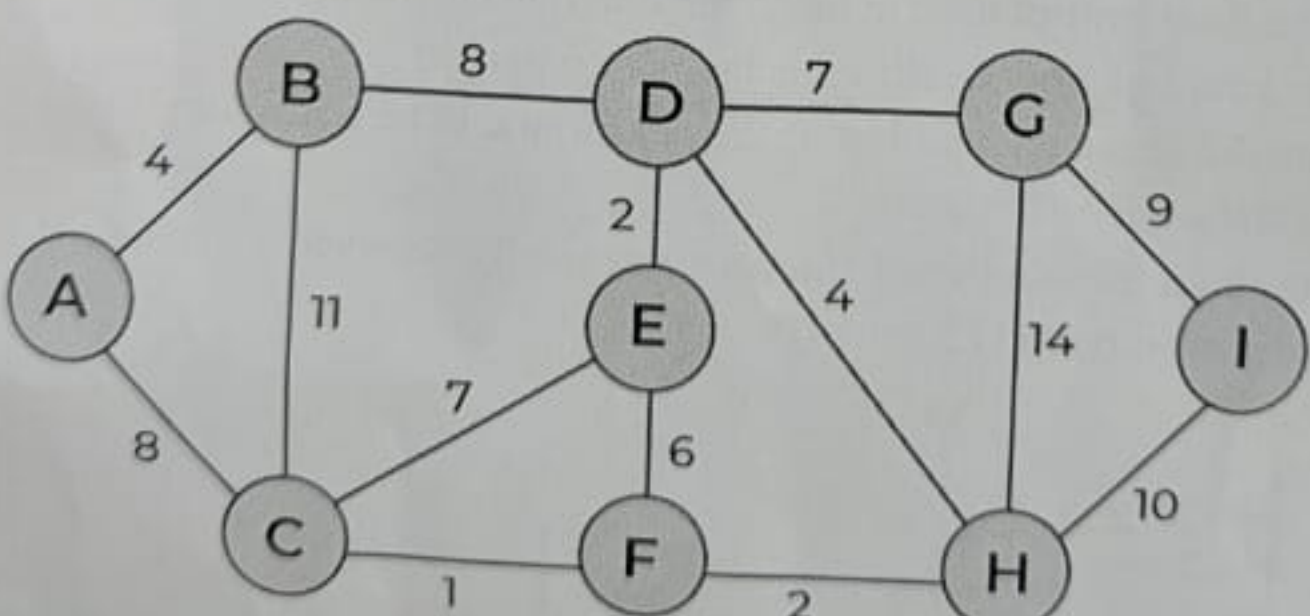
- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- CO2- Identify and analyze the different types of network topologies, error and flow control mechanisms
- CO3- Design sub-netting and enhance the performance of routing mechanisms.
- CO4- Compare various congestion control mechanisms and identify suitable Transport layer protocol for real-time applications

Q. No	Question	M	CO	BL
1.	Consider the frame transmission shown in Figure. This diagram shows transmission of fixed-sized frames from station A to station B. It also shows the appropriate acknowledgments transmitted from station B to station A. a. Identify the flow control used in the given diagram and justify your answer with the procedure of flow control mechanism (6 marks) b. Determine the sequence number of the next frame to be transmitted from station A to station B? (2 marks) c. Calculate the total number of frames successfully received by station B within the observed period (2 marks)	10	CO2	4





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2.	An ISP is assigned a 200.100.0.0/16 block. The ISP needs to allocate the following subnets: Home Users: 75 home users. Each home user requires 16 addresses. Business Clients: 50 business clients. Each business client requires 512 addresses. Wireless Access Points: 100 wireless access points, each requiring 128 addresses. Design the subnets for each group, and calculate how many addresses will remain available after all the allocations.	10	CO3	
3.	A 2400-byte datagram is sent into a network link from Host A to Host B through R1 and R2 based on the following MTU sizes. Datagram is stamped with an identification number of 321 and HLEN of 30 bytes. Host A to R1- 1000 bytes R1 to R2- 800 bytes R2 to Host B -500 bytes How many fragments are produced at R1, R2, and HOST B? Give the values in the various fields in the IP datagram(s) generated related to fragmentation (including identification, flags, fragment offset).	10	CO3	2
4.	Implement Link State vector routing for the given network to find the routing table and compute the least cost distance vectors for Node D. Despite all the steps involved in the routing process. 	10	CO3	3
5.	a. Identify which multiple access method is used in Wi-Fi networks to manage channel access. Include a flow diagram to illustrate the process of channel access in a typical Wi-Fi environment.	6	CO4	2
	b. Describe the header format of unreliable transport layer protocol with its features.	4		
