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Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science & Engineering
Midterm Examination, Summer 2025
Course Code: CSE321, Course Title: Computer Networks
Level: 3 Term: 1 Batch: 65

Time: 01:30 Hrs **Marks: 25**

Answer ALL Questions

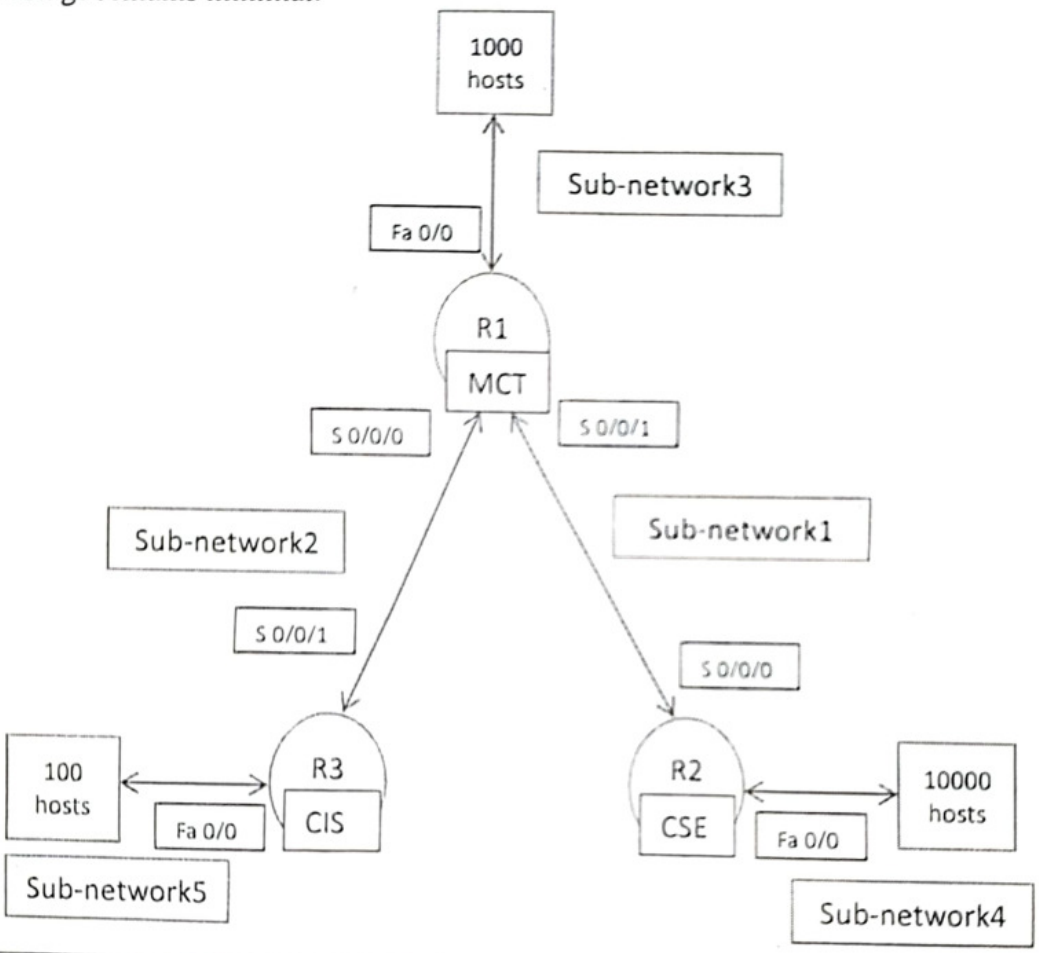
[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially. Short and precise answers are appreciated.]

1.	*a*	You are tasked with setting up networks for some medium-sized offices. Which of the device (router, switch, and hub) is superior over other devices based on the functionalities? Draw conclusion based on your logic.	2	CO1
	b	Additionally, consider the use of routing protocols; which routing protocol is adaptive, meaning it dynamically updates its routing table as the network topology changes? Briefly explain the advantages and disadvantages of using such a protocol.	3	
2.	*a*	You are analyzing the performance of a university website hosted on a single server. Two tests are conducted and it is observed that Test B performs faster than Test A. • Test A: Each resource (HTML, CSS, images) is fetched by opening a new TCP connection. • Test B: A single TCP connection is used to fetch all resources sequentially. Identify which test (A or B) represents Persistent HTTP and which one represents Non-Persistent HTTP.	1	CO2
	b	How Persistent HTTP works, and in what ways does it improve performance in web communications?	2	
	c	From your perspective, what are the possible reasons for HTTP being more widely adopted than FTP for file transfers on the web?	2	
3.	*a*	Suppose you are given the Network Address 10.0.0.0/21. Find out the following: i. Default subnet mask ii. Custom subnet mask iii. Number of usable subnets iv. Number of usable host addresses	2	
	b	Find out the 1001st useable subnet range with proper calculation	3	

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4.	*a*	As a network engineer, you are assigned to create 3 labs for 3 separate departments (CSE, CIS and MCT) situated in 3 different buildings. Each department has separate routers (R1, R2 and R3) and connected through serial cables. CSE, CIS and MCT requires 10000, 100 and 1000 host based labs. Support the given network address is 10.0.0.0/8. Find out the address range of each sub-network with demonstrating the proper procedure. Besides, design these labs in such a way that each host has its own separate IP address and address wastage remains minimal.	5	CO3



	b	Fill up the following table with the IP addresses found from 4 (a).	2	

Network	Address/Mask	Router	Port	Address
Sub-network 1		R1	Fa0/0	
Sub-network 2			S0/0/0	
Sub-network 3			S0/0/1	
Sub-network 4		R2	Fa0/0	
Sub-network 5			S0/0/0	
		R3	Fa0/0	
			S0/0/1	

	c	Summarize these 5 Sub-networks and create a single network (Supernet) with proper calculation.	3	

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