BE|E|x|sem-VII|CBCGS|R-19-20|c-scheme| ANT |SH-24

30|11|2024

Duration: 3hrs   **[Max Marks:80]**

QP-10068106

N.B. : (1) Question No 1 is Compulsory.
     (2) Attempt any three questions out of the remaining five.
     (3) All questions carry equal marks.
     (4) Assume suitable data, if required and state it clearly.

1		Attempt any **FOUR**	[20]
	a	Explain how CSMA/CA works to prevent data collisions and the importance of acknowledgments (ACK) in this process.	
	b	What are Virtual Path Identifiers (VPI) and Virtual Circuit Identifiers (VCI) in ATM, and how do they function?	
	c	Compare and contrast the Open Shortest Path First (OSPF) and Routing Information Protocol (RIP) in terms of routing efficiency and scalability.	
	d	Discuss the concept of STS multiplexing in SONET. How does the multiplexing of lower-order signals into higher-order STS signals work? Illustrate with examples of STS-1 and STS-3c.	
	e	Write a short note on RTP.	
2	a	ATM provides various congestion control mechanisms to maintain network stability. Discuss these mechanisms and evaluate their effectiveness in different scenarios.	[10]
	b	Describe the drawbacks of traditional unicast routing methods (e.g., RIP, OSPF, BGP) in handling multicast traffic. Why do these protocols struggle to efficiently route multicast packets?	[10]
3	a	Describe the different types of SONET devices used in a SONET network, such as Add/Drop Multiplexers (ADMs) and Digital Cross-Connect Systems (DCS). How do these devices contribute to network flexibility and performance?	[10]
	b	Explain the primary security goals in network security. Discuss how confidentiality, integrity, availability, authentication, and non-repudiation contribute to an effective security strategy.	[10]
4	a	Discuss the importance of Quality of Service (QoS) in ATM networks and how it is achieved through traffic shaping and other techniques. Provide examples of applications that benefit from ATM's QoS guarantees.	[10]
	b	Describe the different types of firewalls commonly used in network security, including packet-filtering firewalls, stateful inspection firewalls, and proxy firewalls. Discuss their advantages and limitations in terms of network security.	[10]
5	a	Discuss the key principles of Application Layer Security. Explain how protocols like HTTPS, Secure FTP, and DNS contribute to securing data in applications.	[10]
	b	Explain the fundamentals of data compression. Discuss the difference between lossless and lossy compression, providing examples of each and explaining their applications.	[10]
6	a	Describe the H.323 protocol suite for multimedia communication. How does H.323 support multimedia conferencing, and what are its key components (e.g., call control, transport, and media)?	[10]
	b	Define ubiquitous computing and hierarchical computing, and explain how they are implemented and integrated into modern computing systems.	[10]

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