Question Paper Code	13686

M.E. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Second Semester

M.E. - Computer Science and Engineering (With Specialization in Networks)
24PCNPC201 - NETWORK DESIGN AND PROGRAMMING

Regulations - 2024

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks	K–Level	CO
1.	Define collision detection in Ethernet networks.	2	K1	CO1
2.	Mention two end-to-end level QoS mechanisms.	2	K1	CO1
3.	Compare DSL with traditional dial-up modems.	2	K2	CO2
4.	Why is campus cabling important for large organizations?	2	K2	CO2
5.	Apply the concept of hierarchical routing to reduce routing table size.	2	K3	CO3
6.	Apply RIP protocol in a simple network with three routers.	2	K3	CO3
7.	Outline the impact of separating data and control planes in SDN.	2	K2	CO4
8.	Relate the function of the Bundle Protocol in DTN and discuss its features.	2	K2	CO4
9.	Illustrate the significance of sockaddr_in in socket programming.	2	K2	CO5
10.	Interpret the security concerns associated with using raw sockets.	2	K2	CO5

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

			Marks	K–Level	CO
11.	a)	Classify Code Division Multiplexing (CDM), DWDM, and OFDM based on their principles, advantages, and use cases.	13	K2	CO1
		OR			
	b)	Illustrate different wireless network scenarios and their practical applications in modern communication systems.	13	K2	CO1
12.	a)	Discuss the working of Ethernet switches. How do Gigabit and 10Gbps switches enhance network throughput?	13	K2	CO2
		OR			
	b)	Outline the importance of integrating L3 switches, firewalls, and routers for a secure and efficient enterprise network.	13	K2	CO2
13.	a)	Apply the concept of NAT and DHCP in a campus network setup. Justify the use of each in the design.	13	K3	CO3
		OR			

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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| | b) | Apply RMON tools to collect and analyze traffic data in a medium-scale enterprise network. | 13 | K3 | CO3 |

14. a) Summarize the evolution of switches and control planes and how they led to the emergence of Software Defined Networks**.** 13 K2 CO4

OR

   b) Compare the Bundle Protocol with traditional TCP/IP protocols in the context of DTNs. 13 K2 CO4

15. a) Outline the components of socket address structures and their importance in the transport layer API. 13 K2 CO5

OR

   b) Illustrate the limitations and advantages of connect() usage with UDP sockets. 13 K2 CO5

PART - C (1 × 15 = 15 Marks)

16. a) Develop a custom client-server system using TCP where the server acts as a file server. 15 K3 CO5

OR

   b) Develop a client-server model where the server tracks and logs all client IP addresses and ports using socket address structures. 15 K3 CO6