Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E./B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025

Fourth Semester

Artificial Intelligence and Data Science

CS3591 - Computer Networks

(Common to Fifth Semester Computer Science and Engineering & Information Technology)

Regulations - 2021

Duration : 3 Hrs ***Maximum : 100 Marks***

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Define a protocol in data communication.	L1	1	2
2.	Differentiate between TCP and UDP in the TCP/IP protocol suite.	L4	1	2
3.	Define UDP and list one key characteristic.	L1	2	2
4.	How does TCP handle congestion control differently from UDP?	L2	2	2
5.	What is the purpose of the ARP protocol in networking?	L1	3	2
6.	Differentiate between IPv4 and IPv6 in terms of address length.	L4	3	2
7.	What is the main purpose of the Routing Information Protocol?	L1	4	2
8.	How does Distance Vector Routing differ from Link State Routing?	L2	4	2
9.	Define framing in the Data Link Layer.	L1	5	2
10.	Why is flow control necessary in the Data Link Layer?	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a		Explain the layers of the OSI model and their functions briefly.	L2	1	16
			Or			
	b	i	Describe the working of HTTP with a suitable example.	L2	1	8
		ii	Explain how FTP works and discuss its two different modes of data transfer (Active and Passive).	L2	1	8
12.	a		Compare and contrast TCP and SCTP in terms of features and reliability mechanisms.	L3	2	16
			Or			
	b		Compare and contrast how TCP congestion control mechanisms (Slow Start, Congestion Avoidance, Fast Retransmit) work to maintain network stability.	L3	2	16
13.	a		Explain the concept of subnetting in IPv4. How does subnetting help in efficient IP address allocation?	L2	3	16
			Or			
	b		Describe the working of DHCP and its role in dynamic IP address	L2	3	16

assignment.

14.	a	i	Explain the working of the Open Shortest Path First protocol with its advantages over RIP.	L2	4	8
		i i	Explain Distance Vector Multicast Routing Protocol and Protocol Independent Multicast in terms of their mechanisms and applications.	L2	4	8
			Or			
	b	i	Describe the Border Gateway Protocol and explain why it is considered a path-vector routing protocol.	L2	4	8
		i i	Discuss the count-to-infinity problem in Distance Vector Routing with an example. How does RIP attempt to mitigate this issue?	L2	4	8
15.	a	i	Describe HDLC and PPP protocols in terms of their frame structure and applications.	L2	5	8
		i i	Explain the advantages and disadvantages of Virtual LAN (VLAN) in modern networks.	L2	5	8
			Or			
	b	i	Explain the CSMA/CD mechanism in Ethernet. What happens if a collision is detected?	L2	5	8
		i i	Discuss the challenges in Wireless LAN (802.11) concerning error control and media access. Suggest possible solutions.	L2	5	8