

Total number of printed pages: Programme(D)/SemesterVI/DECE601

2023

**Computer Networking and Data Communication**

Full Marks: 100

Time: Three hours

*The figures in the margin indicate full marks for the questions.*

*Answer any five questions.*

1.	a)	What do you understand by CSMA? Discuss persistent methods of CSMA.	3+6=9
	b)	Describe the working of CSMA/CD.	3
	c)	Describe the construction of coaxial cable and twisted-pair cable. What are the interfaces used in each case?	6+2=8
2.	a)	What do you mean by computer network? Classify them on the basis of distance they cover. Give example.	6
	b)	Describe the classes of IP addresses.	5
	c)	What is USART? Describe the different sections and pin diagram of 8251 USART with the help of a diagram.	2+7=9
3.	a)	What are the different network topologies? Explain the working of star topology. Write its advantages and disadvantages.	2+6=8
	b)	Encode the following data stream in NRZ-I, Manchester encoding, HDB3 and B8ZS:	8

		10000000011111.	
	c)	Discuss synchronous and asynchronous communication. Give example.	4
4.	a)	What is an interface? Draw the pin-out diagram for RS-232C and RS-449 standards. State their important characteristics.	2+4+3= 9
	b)	Draw a mesh topology. Explain how does it work? What are its demerits?	6
	c)	Draw the TCP/IP protocol suite showing the protocols in each layer.	5
5.	a)	Discuss the importance of hubs and repeaters in data communication.	5
	b)	What do you mean by multiple access protocols? Give examples.	4
	c)	Explain the working of pure ALOHA and slotted ALOHA systems. What is the efficiency of these systems? What do you mean by vulnerable time?	11
6.	a)	Discuss the block diagram of UART. What are its various signal names?	8
	b)	Explain the ATM architecture.	6
	c)	Differentiate between- i) baseband signaling and broadband signaling, ii) point-to-point and broadcast communication.	6
7.	a)	Draw a neat sketch of the OSI reference model. Discuss the important features of each layer.	12
	b)	Draw the Ethernet frame format. Elaborate the functions of each field.	8