Registration No: -

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Total Number of Pages: 02

B.Tech / 22IT3PC02T

3rd Semester Regular Examination: 2023-24

COMPUTER NETWORK AND DATA COMMUNICATION

BRANCH: IT

Time: 3 Hours

Max Marks: 100

Q Code: P173

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part-I

Q No.		CO	Level		
Q1				**Short Answer Type Questions (Answer All-10)**	(02x10)
	a)	1	1	RZ line coding scheme has got _____ numbers data level and _____ numbers of signal level.	2
	b)	1	1	Mention the parameters that characterize a periodic signal?	2
	c)	1	2	What do you understand by attenuation? How it is expressed?	2
	d)	1	5	On a 10Mbps network, how long it takes to transmit each bit of data?	2
	e)	1	1	What is multiplexing? Name different multiplexing methods.	2
	f)	2	4	How pure ALOHA is different from slotted ALOHA?	2
	g)	4	1	Name two application layer protocols and mention their significance	2
	h)	1	3	If n number of nodes are present in a network, how many links are required in Mesh and Star topologies.	2
	i)	2	3	What is Hamming distance? Calculate hamming distance d(101011, 010110).	2
	j)	3	3	For the given IP address 168.18.180.0, find out the class and default mask.	2

Part-II

Q No.		CO	Level		
Q2				**Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)**	(06x08)
	a)	1	2	What are the basic network topologies? Explain about them briefly.	6
	b)	2	3	Calculate hamming code for the bit sequence 10101101.	6
	c)	3	3	The IP address of a host in an organization using IPV4 is 176.58.92.100. Answer the following question: What is the mask of the organization, if it has 1200 sub-networks? Mention 5 valid subnet addresses of the organization? Mention 5 broadcast addresses of the organization? Mention 5 valid IP addresses of the organization?	6

	d)	3	2	Does TCP support flow control? If Yes, explain the different strategies for flow control. If No, explain the challenges met by the hosts using TCP in their transport layer?	6
	e)	4	1	What is Domain name system? Discuss the classifications of name space organization with suitable examples?	6
	f)	2	2	With a neat diagram explain the working principle of stop-and-wait ARQ?	6
	g)	3	1	What is framing? Why it is required? Discuss about HDLC frames.	6
	h)	2	3	Find out the CRC for a data-word 100100 with key 1101. Verify at the receiver side;	6
	i)	1	1	What is the difference between the guided and unguided media? Give example of both.	6
	j)	3	1	With neat diagram explain the IPV4 packet format. What is the significance of the next header field?	6
	k)	3	2	With suitable diagrams explain the unicast, multicast and broadcast transmission.	6
	l)	1	3	With example distinguish the Manchester and differential Manchester method of data encoding.	6

Part-III

Q No.		CO	Level		
				Long Answer Type Questions (Answer Any Two out of Four)	(02x16)
Q3	a)	1	3	Considering the binary data 10110001, draw the waveforms for unipolar **NRZ-L, bipolar AMI** and **Manchester line coding** techniques	8
	b)	1	2	What is channelization? Mention the TDMA and FDMA channelization technologies.	8
Q4	a)	1	2	Represent and explain the functions of various layers in OSI model.	8
	b)	2	2	Differentiate between CSMA/ CD and CSMA / CA? Why the collision detection is not applicable in wireless environment?	8
Q5	a)	3	2	What is the role of transport layer in any reference model? Mention the name of the protocols used in this layer. Why connection oriented is more reliable than the connection less communication?	8
	b)	4	2	What is SMTP? Explain the application of SMTP in an e-mail.	8
Q6	a)	3	2	What do you mean by flow control in data communication? With a neat diagram explain the sliding window protocol used for flow control.	8
	b)	3	2	Explain various classes in IPv4 address in details.	8