Date: **Reg.No:**

FRANCIS XAVIER ENGINEERING COLLEGE
(An Autonomous Institution)
Tirunelveli-627003
Department of Computer Science and Engineering
CONTINUOUS ASSESSMENT TEST -I
Month & Year: September & 2022
Year/ Semester: Third Year/ Fifth Semester
Academic Year: 2022-2023/ODD
Course Code/Title: 19CS5602 COMPUTER NETWORKS
(Regulation 2019)

Time: Three hours **Maximum: 100 Marks**

Answer ALL Questions

PART – A (10 x 2 = 20 Marks)

Q.No	Question	Max. Marks	CO-K Level	PO-PI Code
1.	Are Protocols needed for Data Communication? Justify your answer.	02	CO1- K4	2.2.3
2.	What is the propagation time if the distance between the two points is 12,000 km? Assume the propagation speed to be 2.4×10^8 m/s in cable.	02	CO1- K3	2.1.3
3.	A telephone line normally has a bandwidth of 3000. The signal-to-noise ratio is usually 3162. For this channel, compute the capacity.	02	CO1- K3	2.1.3
4.	You have two computers connected by an Ethernet hub at home. Is this a LAN, a MAN, or a WAN? Justify your answer.	02	CO1- K3	2.1.3
5.	Compare and contrast byte-oriented and bit-oriented protocols. Which category has been popular in the past (explain the reason)? Which category is popular now (explain the reason)?	2	CO2-K4	2.2.3
6.	Define the type of the following destination addresses: a. 4A:30:10:21:1O:1A b. 47:20:1B:2E:08:EE	2	CO2-K3	2.2.3

	c. FF:FF:FF:FF:FF:FF			
7.	List out the sublayers of DLL and also define the purpose of it.	2	CO2-K2	2.2.4
8.	What is the purpose of hamming code?	2	CO2-K2	1.3.1
9.	What is the difference between connectionless and connection-oriented services? Which type of service is provided by IPv4? Which type of service is provided by IPv6?	2	CO3-K4	2.2.4
10.	Change the following IPv4 addresses from binary notation to dotted-decimal notation. a. 10000001 00001011 00001011 11101111 b. 11000001 10000011 00011011 11111111	2	CO3-K3	2.2.3

PART – B (5 x 13 = 65 Marks)

Q.No.	Question	Max. Marks	CO-K Level	PO-PI Code
11 (a)	Illustrate the Layered architecture of OSI model in detail. Dialog control and synchronization are two responsibilities of the session layer in the OSI model. Which layer do you think that it is responsible for these duties in the internet model?	13	CO1- K4	2.2.3
	(Or)			
(b)	Illustrate the architecture of TCP/IP protocol stack in detail.	13	CO1- K2	1.3.1
12 (a)	Compare and contrast the various media used for transmission.	[13]	CO1- K4	2.2.4
	(Or)			
(b)	Analyze the working concept of various types of Switching in detail with diagrams.	13	CO1- K2	1.3.1
13(a)	Describe in detail about the general protocol that can be used for only point-to-point configuration.	13	CO2-K2	1.3.1
	(Or)			
(b)	Among the standards IEEE 802.3 and IEEE 802.11, which one can be referred as Wireless Fidelity? Also explain its architecture.	13	CO2-K4	2.2.4

14a)	List the deficiencies of IPv4. Describe how to overcome it.	13	CO3-K2	1.3.1
	(Or)			
(b)	Explain the datagram format of IPv4.	13	CO3-K2	1.3.1
15 (a)	An organization is granted the block 211.17.180.0/24. The administrator wants to create 32 subnets. a. Find the subnet mask. b. Find the number of addresses in each subnet. c. Find the first and last addresses in subnet 1. d. Find the first and last addresses in subnet 32	13	CO3-K4	2.2.3
	(Or)			
(b)	An IPv4 datagram has arrived with the following information **in** the header (in hexadecimal): Ox45 00 00 54 00 03 58 50 20 06 00 00 7C 4E 03 02 B4 OE OF 02 a. Is the packet corrupted? b. Are there any options? c. Is the packet fragmented? d. What is the size of the data? e. How many more routers can the packet travel to? f. What is the identification number of the packet? g. What is the type of service?	15	CO3-K4	2.2.3

PART – C (1 x 15 = 15 marks)

Q.No.	Question	Max. Marks	CO-K Level	PO-PI Code
16 (a)	Suppose we want to transmission the message 1011 0010 0111 and protect it from errors using the CRC polynomial X^4+X^2+1. Use polynomial long division to determine the message that should be transmitted. Suppose the leftmost bit of message is inverted due to	15	CO2-K3	2.2.4

	noise on the transmission link. What is the result of the receiver's CRC calculation? How does the receiver know that an error has occurred?			
(Or)				
(b)	(i) Assuming even parity, find the parity bit for each of the following data units. a. 1001011 b. 0001100 c. 1000000 d. 1110111 (ii) Analyze "Bluetooth used for Short range communication or long range communication".	4+11	CO2-K4	2.2.3

Bloom's Taxonomy Level wise Marks and Course Outcome wise Marks Distribution Analysis:

Competence level	**Blooms' Taxonomy**	**Question No.**	**Marks**	**BTL Contribution in %**	**Course Outcome**	**Marks**	**CO Contribution in %**
K1	Remember				CO1	60	33.3
K2	Understand	**7,8,11b,12b,13a, 14a,14b**	**69**	**38.3**	CO2	64	35.6
K3	Apply	**2,3,4,6,10,16a**	**25**	**13.9**	CO3	56	31.1
K4	Analyse	**1,5,9,11a,12a, 13b,15a,15b,16b**	**86**	**47.8**	CO4		
K5	Evaluate				CO5		
K6	Create						
Total			**180**	**100**		**180**	**100**

Prepared By **Verified By** **Approved By**