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.	What are the three criteria necessary for an effective and efficient network?	02	CO1- K2	1.3.1
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.	We need to send 265 kbps over a noiseless channel with a bandwidth of 20 kHz. How many signal levels do we need?	02	CO1- K3	2.1.3
4.	For *n* devices in a network, what is the number of cable links required for a mesh, ring, bus, and star topology?	02	CO1- K3	2.1.3
5.	Do we need a multiple access protocol when we use the 1ocalloop of the telephone company to access the Internet? Why?	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 c. FF:FF:FF:FF:FF:FF	2	CO2-K3	2.2.3
7.	List out the sublayers of DLL and also define the purpose of it.	2	CO2-K2	2.2.4
8.	Analyze the reason for moving from the Stop-and-	2	CO2-K4	2.2.3

	Wait ARQ Protocol to the Go-Back-N ARQ Protocol.			
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)	(i) For each of the following four networks, discuss the consequences if a connection fails. a. Five devices arranged in a mesh topology b. Five devices arranged in a star topology (not counting the hub) c. Five devices arranged in a bus topology d. Five devices arranged in a ring topology (ii) Draw a hybrid topology with a star backbone and three ring networks	8+5	CO1- K4	2.2.3
12 (a)	(i) Compare and contrast the various guided media used for transmission. (ii) Performance is inversely related to delay. When you use the Internet, which of the following applications are more sensitive to delay? - Sending an e-mail - Copying a file - Surfing the Internet	[9+4]	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 both point-to-point and multipoint communications.	13	CO2-K2	1.3.1
	(Or)			
(b)	Among the standards IEEE 802.3 and IEEE 802.11, which one can be referred as WiFi? Also explain its architecture.	13	CO2-K4	2.2.4
14a)	List the drawbacks 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)	(i) Find the error, if any, in the following IPv4 addresses. a. 111.56.045.78 b. 221.34.7.8.20 c. 75.45.301.14 d. 11100010.23.14.67 (ii) Find the class of each address. a. 00000001 00001011 00001011 11101111 b. 14.23.120.8	8+5	CO3-K3	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?	15	CO3-K4	2.2.3

	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?			

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 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?	15	CO2-K3	2.2.4
(Or)				
(b)	Analyze the design procedure for simple, stop and wait, Go-back-N, Selective Repeat .	15	CO2-K4	2.2.4

<u>Bloom's Taxonomy Level wise Marks and Course Outcome wise Marks Distribution Analysis</u>:

Competence level	Blooms' Taxonomy	Question No.	Marks	BTL Contribution in %	Course Outcome	Marks	CO Contribution in %
K1	Remember				CO1	60	33.3
K2	Understand	**1,7,12b, 13a, 14a, 14b**	**56**	**31.1**	CO2	64	35.6
K3	Apply	**2,3,4,6,10,15a ,16a**	**38**	**21.1**	CO3	56	31.1
K4	Analyse	**5,8,9, 11a, 11b, 12a, 13b. 15b, 16b**	**86**	**47.8**	CO4		
K5	Evaluate				CO5		

K6	Create						
Total			**180**	**100**		**180**	**100**

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