

Daffodil International University

Department of Computer Science and Engineering Faculty of Science & Information Technology Final Examination, Fall-2023

Course Code: CSE225, Course Title: Data Communication

Level: 2 Term: 1 Batch: 62

Time: 2 Hours Marks: 40

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

	a)	Analyze and draw the constellation diagram for the following:	[4]	
	i i	a. ASK, with peak amplitude values of 0 and 2		CO3
- 1		b. BPSK, with a peak amplitude value of 3		
		c. QPSK, with a peak amplitude value of 2		
	is a	d. 8-QAM with two different peak amplitude values, 2 and 3, and	é.	
	6-14	four different phases		
	b)	Examine the bandwidth for the following situations if we need to modulate a	[3]	
		6-KHz voice.		
		a) AM		
		b) PM (set $\beta = 4$)		
		c) PM (for Narrowband)		
	c)	Distinguish the characteristics of a digital signal that are changed in each of	[3]	
		the following digital-to-analog conversions.		
		a. ASK		
		b. FSK		
		c. PSK		
		Besides, briefly explain any one of them with the necessary diagram.		
2.	(a)	Telephone companies implement TDM through a hierarchy of digital signals,	[4]	
		called digital signal (DS) service or digital hierarchy. Point out the digital		CO ₃
	Sec.	signals with the required bit rates. Draw figure if appropriate.		
	b)	Outline the strategies used to handle uneven input data rates in case of TDM.	[3]	
	c)	Assume that a voice channel occupies a bandwidth of 4 kHz. We need to	[3]	
	"	multiplex 15 voice channels with guard bands of 100 Hz using FDM.		
	le i	Examine the required bandwidth. Besides, according to you, what could be		
		the possible applications of FDM?		
3.	(a)	Suppose you have the following bits to send (in decimal):	[4]	
٠.	"	6, 13, 15, 7, and 2		CO4
		Inspect the checksum.		
	b)	Compare your obtained checksum (from 3. a) to prove that there is no error	[3]	
	0)	in the destination portion.		
	(c)	Suppose, you want to send the data word 100100 and the generator is using	[3]	
	5	1101 as divisor. Now, calculate the code word that will be generated by the		
		CRC Encoder		
4.	(a)	Suppose you have 4 stations (A, B, C and D).	[4]	
	"	A is sending 1,		CO4
		C and D are sending 0 and		
		B remains silent.		
		Examine the CDMA multiplexing values using the Walsh table.		
	41	Which of the CSMA (CSMA/CD or CSMA/CA) is used in Wireless Internet?	[3]	
	b)		[5]	
		Analyze that with the proper figure. Compare Polling and Token passing with necessary diagram.	[3]	1
	(c)	Compare Polling and Token passing with hoossaly diagram.	[5]	