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Daffodil International University

Faculty of Science & Information Technology

Final Examination, Spring 2023

Course Code: CSE225: Course Title: Data Communication

Level: 2 **Term: 1** **Batch: 61**

Time: 2:00 Hrs **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.]

1.	a)	Uneven input data rates are one of the issues that TDM has to deal with. However, both multilevel and multiple-slot multiplexing are capable to even the data rates but in a different way. Therefore, compare between multilevel and multiple-slot TDM with appropriate figure.	[2]	CO3
	b)	Ten sources, six with a bit rate of 400 kbps and four with a bit rate of 800 kbps are to be combined using multilevel TDM with no synchronizing bits. Answer the following questions about the final stage of the multiplexing: i. Examine the size of a frame in bits. ii. Examine the frame rate. iii. Examine the duration of a frame. iv Examine the data rate.	[4]	
	c)	A digital signal hierarchy, also known as a digital hierarchy or digital signal (DS) service, is how telephone companies implement TDM. Therefore, analyze the digital hierarchy of telephone company with proper flow diagram. Besides, discover the bandwidth and overhead for each level.	[4]	
2.	a)	Suppose you have the following message bits: 1011010 0011101 1110000 Discover your transmitted bits if you use 1-D (even) parity.	[2]	CO4
	b)	Analyze the above problem (2.a) using 2-D parity.	[2]	
	c)	Suppose you have the following bits to send (in decimal): 5, 12, 10, 2, and 7 Inspect the checksum.	[3]	
	d)	Compare your obtained checksum (from 2.c) to prove that there is no error in destination portion.	[3]	
3.	a)	Compare between Poll and Select with appropriate figure.	[3]	CO4
	b)	Which of the CSMA (CSMA/CD or CSMA/CA) is used in traditional ethernet? Analyze that with proper figure.	[3]	
	c)	Suppose you have 4 stations (A, B, C and D). B, C are sending 1, D is sending 0 and A remains silent. Discover the CDMA multiplexing values using Walsh table.	[4]	
4.	a)	The slotted ALOHA improves the pure ALOHA in terms of reduction of collisions. Apply appropriate figure to justify the statement.	[5]	CO4
	b)	Make use of your knowledge to justify that Switch has the filtering capability but Hub does not have.	[2]	
	c)	CSMA is based on the principle "listen before talk". Construct the logic to prove the statement.	[3]	