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Daffodil International University

Department of Software Engineering

Faculty of Science & Information Technology

Midterm Examination, Fall 2024

Course Code: SE225; Course Title: Data Communication and Computer Networking

Sections & Teachers: ALL, NIR, MBM

Time: 1 Hour 30 Mins **Marks: 25**

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*	**Illustrate** the key components & Fundamental Characteristics of Data Communication System.	[Marks-4]	CLO-1 *Level-3*
	b	**Express** the key elements of a protocol.	[Marks-2]	
	c	For *n* devices in a network, **Demonstrate** the number of cable links required for a mesh, ring, bus, and star topology with related figure.	[Marks-4]	
2	*a*	A network with bandwidth of 110 Mbps can pass only an average of 1,250 frames per minute with each frame carrying an average of 11,000 bits. **Compute** the throughput of this network and discuss its relationship with bandwidth.	[Marks-3]	CLO-2 *Level-2*
	b	**Classify** Transmission Impairment in Data Communication	[Marks-2]	
	c	**Determine** the total latency for a frame of size 6 million bits that is being sent on a link with 8 routers each having a queuing time of 3 μs. The processing time is 1 μs and length of the link is 3000 Km. The speed of light inside the link is 3×10^8 m/s. The link has a bandwidth of 7 Mbps.	[Marks-5]	
3	*a*	**Demonstrate** the concept of redundancy in error detection and correction.	[Marks-2]	CLO-3 *Level-3*
	b	Assume that Data to be sent is: 1011000 1011011 1011001. **Apply** 2-Dimensional parity check procedure for both Sender & Receiver Side.	[Marks-3]	

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