



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

Marks: 25

Time: 1 Hour 30 Mins

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 $3 \mu\text{s}$. The processing time is $1 \mu\text{s}$ and length of the link is 3000 Km. The speed of light inside the link is $3 \times 10^8 \text{ m/s}$. 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]	