Daffodil International University

Department of Software Engineering

Faculty of Science & Information Technology

Midterm Examination, Spring 2025

Course Code: SE 225; Course Title: Data Communication and Computer Networking

Sections & Teachers: ALL(Batch-40); NIR, RT, SR

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*	A network with bandwidth of 10 Mbps can pass only an average of 12,000 frames per minute with each frame carrying an average of 10,000 bits. **Calculate** the throughput of this network and Express its relation with bandwidth.	[Marks-3]	CLO-1 *Level-3*
	b	**Show** the effectiveness of DIU Student Registration System based on four fundamental characteristics.	[Marks-4]	
	c	For *n* devices in a network, **Demonstrate** the number of cable links required for a mesh, bus, and star topology with related figure.	[Marks-3]	
2	*a*	Suppose a computer sends a message at application layer to another computer somewhere in the internet. **Explain** how does information get passed from one layer to the next and finally reach the destination in the OSI model with appropriate figure.	[Marks-3]	CLO-2 *Level-2*
	b	"A high SNR means the signal is less corrupted by noise"- Discuss the statement with required equation.	[Marks-3]	
	c	**Determine** the total latency for a frame of size 6 MB that is being sent of having a queuing time of 3 μs. The processing time is 1 μs and length of the link is 2000 Km. The speed of light inside the link is 3×10^8 m/s. The link has a bandwidth of 100 Kbps.	[Marks-4]	
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** Checksum procedure for both Sender & Receiver Side where received data is: 1011010 1011001 1011001.	[Marks-3]	