Daffodil International University

Department of Software Engineering

Faculty of Science & Information Technology

Final Examination, Spring 2025

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

Sections & Teachers: Sec: A to I (Batch-40); NIR, RT, SR

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)	**Illustrate** the process of data transmission from the sender to the receiver across the seven layers of the OSI model. Use a diagram to represent the encapsulation and decapsulation process.	[Marks-5]	CLO-2 Level 2
	b)	**Articulate** the process of determining the transmitted bit stream for the bit sequence `10011101` using the CRC method with the generator polynomial $x^4 + x$.	[Marks-5]	CLO-2 Level 2
2.	a)	**Illustrate** with a diagram the process of 3-way handshaking in TCP connection establishment.	[Marks-5]	CLO-3 Level 4
	b)	**Distinguish** between TCP and UDP.	[Marks-5]	CLO-3 Level 4
	c)	**Explain** with a diagram the working process of DNS server.	[Marks-5]	CLO-3 Level 4
3.	a)	**Figure Out** the limitations in classful addressing led to the development of classless addressing (CIDR) and explain the ways used in CIDR to improve the limitations.	[Marks-4]	CLO-4 Level 4
	b)	**Explore** the IP addresses 200.112.17.23 and 192.168.10.129/26 **Identify** the subnet mask, network address, broadcast address, and range of valid host addresses of both IP.	[Marks-5]	CLO-4 Level 4
	c)	Given IP = 192.168.10.0, New SM = 255.255.255.192. **Investigate** the answers to the following questions 1. Number of Subnets? 2. Number of Valid Hosts per subnet? 3. Network & Broadcast IP of each Subnet? 4. FVH & LVH IP?	[Marks-6]	CLO-4 Level 4