Daffodil International University

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Midterm Examination, Fall 2022
Course Code: CSE225; Course Title: Data Communication
Level: 2 Term: 2

Time: 90 Minutes **Marks: 25**

Answer ALL Questions

(All portions of each question must be answered sequentially)
[numbers in the right-hand margin indicate full marks of each question and corresponding course outcomes].

1.	a)	A network must be able to meet a certain number of criteria in order to provide better services to the users. Explain at least two of them with real life examples.	3	CO1
	b)	Assume eighty nine devices are arranged in a mesh topology. How many cables are needed? How many ports are needed for each device?	2	
2.	a)	Suppose a computer sends a frame to another computer on a bus topology LAN. The physical destination address of the frame is corrupted during the transmission. What happens to the frame? How can the sender be informed about the situation?	2.5	CO2
	b)	Translation, encryption, and compression are some of the duties of the presentation layer in the OSI model. Which layer do you think is responsible for these duties in the Internet model? Explain your answer.	2.5	
3.	a)	A packet of 7 million bits is being sent on a link from a sender to a receiver with 9 routers in the middle. Each router has a queuing time of 3 μs. Each node in the system has average processing time of 1 μs. The length of the link is 9000 km. The speed of light inside the link is 2×10^8 m/s. The link has transmission rate of 7 Mbps. What is the total delay for the packet?	3	CO3
	b)	A signal with 300 milliwatts power passes through 9 devices, each with an average noise of 6 microwatts. What is the SNR? What is the SNR_{dB}?	2	
4.	a)	Draw the signal spectrum for RZ, NRZ-I and MLT-3. Use the binary form of the $(AC9)_{16}$ as the data stream.	4.5	
	b)	Why sampling is important while converting analog signal to digital data?	0.5	
5.	a)	Explain the detail implementation process of the following techniques. Use the binary form of the $(D8)_{16}$ as the input signal. - BPSK - FM	2.5*2	