

Daffodil International University Department of Software Engineering Faculty of Science & Information Technology

Midterm Examination, Fall 2024

Course Code: SE 213; Course Title: Digital Electronics & Logic design

Batch: 42 Batches (All); SP, NIR, MBM, SA, SI

Time: 1:30 Hrs 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)	i) Subtract the binary numbers using 2's complement method.	[Marks-2+2]	CLO-1
		100101 - 110011		Level-2
		ii) Add the binary addition of the following number: (111011) ₂ + (10111) ₂		
	b)	Convert the following numbers:	[Marks-3]	
		i) $(9AF3.31A)_{16} = (?)_8$		
		ii) $(179.1101)_{10} = (?)_2$		
	c)	Discuss the truth table and logic circuit of the following expression:	[Marks-3]	
		F=A'B[C(AB+BC)+ABC]		
2	a)	How can you demonstrate that a NAND gate can be used to	[Marks-4]	CLO-2
		implement all other basic logic gates, justifying its classification as a		Level-3
		universal gate?		
Ì	b)	$F(A, B, C, D) = \sum (0,4,8,9,10,12,13,14)$	[Marks-5]	
		Apply k-map simplification technique to simplify the above		
		expressions. Construct the logic diagrams of the simplified output.		
	c)	Express a full-adder using by sum of products.	[Marks-6]	