

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