



Daffodil International University
Faculty of Science & Information Technology
Department of Software Engineering
Midterm Examination, Spring_2026

Course Code: SE 213; Course Title: Digital Electronics & Logic design
Sections & Teachers: 45: NIR (A-D), SP (G-J), NJN (E, F, K, L), RRB (M)

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)	Convert the following numbers: $(9AF3.31A)_{16} = (?)_8$	[Marks-3]	CLO-1 Level-2
	b)	A parking management system's central processor internally processes subtraction of two values $(10101011 - 11010110)$ using binary arithmetic with the 1's complement method; the result is then passed to the display unit to show the output. Subtract the values to find the output shown on the display unit, showing the necessary steps.	[Marks-4]	
	c)	Compute the binary arithmetic operation Division, where Dividend is 1001101 and Divisor is 1010 .	[Marks-3]	
2	a)	In a fire Alarm System, the alarm (F) is triggered based on the following Boolean expression $F = \overline{w}y(\overline{w}xz) + \overline{w}x\overline{y}z + w(\overline{x} + y)$ Illustrate the simplified expression for the above Fire Alarm System using Boolean Laws and sketch the simplified circuit.	[Marks-3+2]	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 derive the most simplified version of the above expressions. Construct the logic diagrams of the simplified output.	[Marks-3+2]	
	c)	Express the following function into Product of Sum (POS) standard canonical form and then change it into its opposite canonical form: $F(X,Y,Z) = (XY + Z') (X'Z + Y)$	[Marks-3 + 2]	