



Daffodil International University

Department of Software Engineering
Faculty of Science & Information Technology
Final Examination, Fall 2024

Course Code: SE 213, Course Title: Digital Electronics & Logic Design

Batch: 42nd; Sections: A, B, C, D, E, F, G, H, I, J, K

Teachers: SP, NIR, MBM, SA, SI

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)	Compute the simplified Boolean expression for the following 4-variable K-map: $Y(A, B, C, D) = A'B'C'D' + A'B'C'D + A'B'CD' + A'B'CD + ABC'D' + ABC'D + AB'C'D' + AB'C'D + AB'CD + AB'CD' + A'BCD$	[Marks-7]	CLO-2 L2
	b)	Clarify the process of simplifying the given Boolean equation $(A+C)(AD+BD) + AC + C$ using Boolean algebra rules.	[Marks-3]	
2.	a)	Construct and configure an Octal to Binary Encoder circuit for appropriate binary input. Draw the Circuit diagram, truth table and derive the output expressions.	[Marks-5]	CLO-3 L3
	b)	Construct a 16×1 multiplexer using 4×1 multiplexer. Draw a block diagram of the circuit, label all inputs and select lines, and explain the data flow through the circuit to generate the final output.	[Marks-5]	
	c)	Derive the the following function applying the concept of decoder: $F(w,x,y,z) = w'x'y'z + w'x'yz + w'xyz + wx'y'z' + wxy'z' + wxyz'$	[Marks-5]	
3.	a)	Differentiate between sequential circuit and combinational circuit.	[Marks-5]	CLO-4 L4
	b)	Explain the D Flip-Flop & T Flip-Flop along with truth table and circuit diagram.	[Marks-5]	
	c)	In 4-bit shift register: 0110, illustrate how many clock pulses are required to change the content of shift register when all 1's (using by XOR gate.)	[Marks-5]	