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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'yz' +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]	

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