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Daffodil International University

Department of Software Engineering

Faculty of Science & Information Technology

Final Examination, Fall 2025

Course Code: SE 222; Course Title: Computer Architecture

Batch & Sections: 43 (A to O)

Course Teachers: SR, AS, FBR, HKN

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)	**Analyze** how set-associative mapping reduces the limitations found in direct-mapped cache and associative-mapped caches.	[Marks-5]	CLO-2 *Level-4*
	b)	Consider a direct maped cache that has a physical address of 16 bits and among them 4 bits is or tag. Memory block size is of 32 bytes. **Examine** Main memory size, Cache size and no of blocks in memory.	[Marks-5]	
2.	a)	**Illustrate** the step of Booth's algorithm for 2's complement multiplication for the following values: (Using 4 bits). **Multiplicand: -4** **Multiplier: -6**	[Marks-6]	CLO-3 *Level-4*
	b)	**Explain** user-visible registers and flag register.	[Marks-5]	
	c)	**Articulate** zero, one and two address machine instructions with example.	[Marks-3]	
	d)	**Transform** the following IEEE-754 32 bit floating point binary numbers into decimal.	[Marks-6]	
3.	a)	**Visualize** a Five-stage pipelining process for 6 instructions and discuss about how it improves execution time over non-pipelined execution process.	[Marks-4]	CLO-4 *Level-3*
	b)	**Show** the Effective Address (EA) calculation process of Indirect, Register Indirect and Displacement addressing technique with figure.	[Marks-3]	
	c)	**Investigate** the factors that may limit the performance of pipelining process.	[Marks-3]	

0	01111100	11100000000000000000000