



Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

Midterm Examination, Fall 2026

Course Code: CSE413 Course Title: Computer Architecture and Organization

Level: 4 Term: 1 Batch: 65

Time: 01:30 Hrs

Marks: 25

Answer ALL the Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes]

1.	a)	A computer system is designed to provide high performance at minimum cost. After the initial implementation, it is found to be slower and more expensive than expected. Briefly explain that how an iterative design process can improve the system. Indicate when analysis and design would be performed.	[3]	CO1
	b)	A computer designer considers the instruction set visible to programmers, while another examines how the CPU, memory and I/O units are connected and implemented. Differentiate between computer architecture and computer organization with one suitable example for each.	[2]	
2.	a)	A computer has byte-addressable memory (8 bits per location). The 36-bit hexadecimal value 3A5C7E912H is to be stored starting at address FF29FFFH. For storage, pad it with four leading zero bits to form complete bytes in binary. Show the contents in binary of the consecutive memory addresses in both Little-Endian and Big-Endian formats.	[5]	CO3
	b)	Apply the following instruction-operand techniques to evaluate the expression: $Z = (F \times (A + B) / (C - D) + E)$ i) Zero-operand (stack-based) instruction sequence. ii) Two-operand instruction sequence. Assume that all variables are initially in register memory and follow standard operator precedence.	[5]	
3.	a)	A computer system needs to encode the text "CSe" into binary format for data storage. As a computer architecture student, perform the following operations: Determine the ASCII decimal value of each character in "CSe". Then convert each ASCII decimal value into its corresponding octal representation using the traditional repeated-division method. Then represent each octal in 8-bit binary format. Finally, write the complete binary representation of "CSe".	[5]	CO2
	b)	Using the 12-bit 2's complement method, perform the subtraction $1467 - 2789$. Show step by step to get the final result. Since the result is negative, find its magnitude by taking the 2's complement again. Convert the magnitude into decimal. Justify your answer using normal decimal subtraction.	[5]	