



Daffodil International University

Department of Software Engineering

Faculty of Science & Information Technology

Midterm Examination, Spring 2026

Course Code: SE 111; Course Title: Computer Fundamentals

Sections & Teachers: SI (A,B), MKH (C,D,E), FC (F), AG (G), AAS (H)

Time: 1 Hour 30 Mins

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)	When a computer is powered on, it follows a set of built-in instructions that guide it to check hardware components and load the operating system. These instructions are permanently stored inside the system and remain available even when the power is turned off. After startup, the computer uses a fast working space to store currently running programs and open files, allowing them to be accessed quickly. To make processing even faster, the system also relies on a very small and ultra-fast memory, which is located close to the processor. This component temporarily holds the most frequently used data and instructions. This helps the processor avoid repeatedly fetching data from the main working space and improves overall speed. When the computer is turned off or power is interrupted, all temporary working and high-speed data are cleared, while the built-in startup instructions remain unchanged. Based on the scenario, explain the components briefly along with their functions in processing.	[Marks-6]	CLO-1 C2
	b)	i) Convert 11011_2 to its Base 16 equivalent Number. ii) Convert 0111101.101110_2 to its Base 10 equivalent Number. iii) Convert 456_{11} to its Base 4 equivalent Number.	[Marks-9]	
2.	a)	An engineer designs a digital circuit using only one type of logic gate to simplify hardware. By connecting its inputs, he saw that the gate acts as an inverter. By combining two gates, it produces an output only when both inputs are active. With another arrangement, he connects three gates and observes that the same gate generates an output when at least one of its inputs is active. Identify the logic gate the engineer used in the above scenario and illustrate the work using a diagram for each implementation.	[Marks-3]	CLO-2 C4

b) Identify the final output for each logic gates from the given logic circuit diagram also simplify the output result and prove your simplification using truth table.

[Marks-7]

