Daffodil International University

Faculty of Science & Information Technology (FSIT)
Department of Computer Science and Engineering
Midterm Examination, Spring 2024
Course Code: CSE 235, Course Title: Numerical Methods
Level-2, Term-2

Time: 01:30 Hours **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)*	**Explain** Absolute Error and Relative Error.	[2]	CLO1
	b)	**Interpret** the value of $\sqrt{331} + \sqrt{257} + \sqrt{191} + \sqrt{119}$ to 4 significant digits and find its **absolute, relative and percentage error**.	[3]	
2	*a)*	**Solve**, $3x + \text{Sin } x = e^x$ by using **Bisection method** to the accuracy of 10^{-3}.	[6]	CLO2
	b)	**Identify** the approximate root of $e^{-x}(3.2 \text{ Sin } x - 0.5 \text{ Cos } x) = 0$ that lies on [3, 4] accurate to 4 decimal places.	[4]	
3	*a)*	**Estimate** the value of x, when $\sqrt[3]{x} = 3.756$ from the given table by using **Lagrange's interpolation**:	[5]	CLO3
	b)	**Evaluate** the difference table to **find the polynomial** which takes the values:	[5]	

x	50	52	55	59
$\sqrt[3]{x}$	3.684	3.732	3.779	3.825

x	0	1	2	3
f(x)	1	2	1	10

Good Luck!!!