Daffodil International University

Faculty of Science & Information Technology (FSIT)
Department of Computer Science and Engineering
Midterm Examination, Fall 2024
Course Code: CSE 226, Course Title: Numerical Methods
Level-2, Term-2
Batch-64

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)	Indicate Five uses of Numerical Methods in Computer Science.	[2]	CO1
	b)	Interpret the value of $\sqrt{301} + \sqrt{157} + \sqrt{91} + \sqrt{217}$ to 5 significant digits and find its Absolute, Relative and Percentage Error.	[3]	
2	a)	Identify the approximate root of, $4\sin x - e^x = 0$ lies between $(0, 1)$ using the Method of False Position correct up to Four Decimal Places.	[5]	CO2
	b)	Solve the algebraic equation, $x^3 - 2x^2 - 4 = 0$ using The Newton Raphson Method correct up to Five Decimal Places.	[5]	
3	a)	The table gives the distance in nautical miles of the visible horizon for the given heights in feet above the earth's surface:	[5]	CO3

x (height)	100	150	200	250	300	350	400
y (distance)	10	13	15	16	18	19	21

Evaluate the difference table to find the distance when the height is 170.

	b)	Estimate the value of, $f(x)$ at $x = 8$, from the given table by using Lagrange's Interpolation:	[5]	

x	3	7	9	10	12
f(x)	35	51	62	67	77

Good Luck!!!