Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science & Engineering
Mid Examination, Summer 2025
Course Code: CSE226, Course Title: Numerical Methods
Level: 2, Term: 3, Batch: 65

Time: 01:30 Hrs   **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)	**Demonstrate** the conditions of significant digits with example.	[2]	
	b)	**Explain** E_R and E_P after finding the sum of the following expression, if all the number are correct up to 4 Significant digits. $$\sqrt{82} - \sqrt{91} + \sqrt{101}$$	[3]	CO1
2.		**Apply** error analysis to find out the best method between (i) False Position and (ii) Newton-Raphson, after finding the real root up to 4 significant digits are correct of the following equation, which belong to the interval [0.5, 1.5]. [N.B: Exact values of the root is 1.22263998]; $$x^3 + 2e^{-2x}\sin\left(x^2\right) - 2 = 0$$	[10]	CO2

3. a) The historical population data for 5 specific years in Bangladesh are given.

Year	1980	1990	2000	2010	2020
Population (Crore)	8.393	10.715	12.919	14.839	16.742

Determine the population in 1987 in Bangladesh.   **[5]**

3. b) Profit data for an industry have been given in relation to the number of units of its products.   **CO3**

Units	1	2	3	5
Profit (Tk in Lakh)	3	5	15	83

For the products of x unit, **Determine** the profit function.   **[5]**