



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]	CO1												
	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]													
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]; $x^3 + 2e^{-2x} \sin(x^2) - 2 = 0$	[10]	CO2												
3.	a)	The historical population data for 5 specific years in Bangladesh are given. <table border="1"><tr><td>Year</td><td>1980</td><td>1990</td><td>2000</td><td>2010</td><td>2020</td></tr><tr><td>Population (Crore)</td><td>8.393</td><td>10.715</td><td>12.919</td><td>14.839</td><td>16.742</td></tr></table> Determine the population in 1987 in Bangladesh.	Year	1980	1990	2000	2010	2020	Population (Crore)	8.393	10.715	12.919	14.839	16.742	[5]	CO3
	Year	1980	1990	2000	2010	2020										
Population (Crore)	8.393	10.715	12.919	14.839	16.742											
b)	Profit data for an industry have been given in relation to the number of units of its products. <table border="1"><tr><td>Units</td><td>1</td><td>2</td><td>3</td><td>5</td></tr><tr><td>Profit (Tk in Lakh)</td><td>3</td><td>5</td><td>15</td><td>83</td></tr></table> For the products of x unit, Determine the profit function.	Units	1	2	3	5	Profit (Tk in Lakh)	3	5	15	83	[5]				
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