



Daffodil International University
Faculty of Science & Information Technology
Department of Computer Science & Engineering
Midterm Examination, Spring 2026
Course Code: CSE226, Course Title: Numerical Methods
Level: 2 Term: 3, Batch: 66

Time: 1:30 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) Identify the number of significant digits of 10000, 12.000300, 0.00025, and 2.0005	2	CO1														
	(b) Explain E_A , E_R , and E_P after finding the sum of $\sqrt{11} + \sqrt{21} + \sqrt{31}$ correct to 5 significant digits.	3															
2.	(a) Apply Bisection method to find a real root of $x^2 + 4\sin x = 0$ that lies on $(-2, -1)$	5	CO2														
	(b) Apply Newton-Raphson method to find a real root of $x^3 + x^2 - 1 = 0$ belonging in $(0, 1)$	5															
3.	(a) The population of a village in the last six censuses was recorded as follows: <table border="1"><tr><td>Year (x)</td><td>1941</td><td>1951</td><td>1961</td><td>1971</td><td>1981</td><td>1991</td></tr><tr><td>Population (y)</td><td>2500</td><td>2800</td><td>3200</td><td>3700</td><td>4350</td><td>5225</td></tr></table> Determine the population for the year 1945	Year (x)	1941	1951	1961	1971	1981	1991	Population (y)	2500	2800	3200	3700	4350	5225	5	CO3
	Year (x)	1941	1951	1961	1971	1981	1991										
Population (y)	2500	2800	3200	3700	4350	5225											
(b) A polynomial passes through the given set of points, determine the polynomial.  <table border="1"><tr><td>x</td><td>0</td><td>1</td><td>2</td><td>5</td></tr><tr><td>f(x)</td><td>2</td><td>3</td><td>12</td><td>147</td></tr></table>	x	0	1	2	5	f(x)	2	3	12	147	5						
x	0	1	2	5													
f(x)	2	3	12	147													