



Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

Midterm Examination, Summer 2026

Course Code: CSE226, Course Title: Numerical Methods

Level: 2 Term: 3, Batch: 67

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 1.0×10^{-6} , 0.000550, 010.002 and 20.0000 along with the necessary conditions of being significant digits.	2	CO1														
	(b) Solve $S = \sqrt{11} + \sqrt{7} + \sqrt{5} + \sqrt{3}$ to 6 significant digits along with the E_A , E_R , and E_P .	3															
2.	(a) Apply false position method to find a real root of $e^x - 4x^2 = 0$ that lies on (0,1) correct to 4 decimal places.	5	CO2														
	(b) Apply fixed point iteration method to find a real root of $\cos x - 3x + 3 = 0$ belonging in (1,2) correct to 5 significant digits.	5															
3.	(a) The population of a town in the last six censuses was recorded as follows: <table border="1"><tr><td>Year (x)</td><td>1911</td><td>1921</td><td>1931</td><td>1941</td><td>1951</td><td>1961</td></tr><tr><td>Population in thousands (y)</td><td>12</td><td>15</td><td>20</td><td>27</td><td>39</td><td>52</td></tr></table> Determine the population for the year 1946.	Year (x)	1911	1921	1931	1941	1951	1961	Population in thousands (y)	12	15	20	27	39	52	5	CO3
	Year (x)	1911	1921	1931	1941	1951	1961										
Population in thousands (y)	12	15	20	27	39	52											
(b) A polynomial passes through the following set of points: <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> Determine the polynomial using Lagrange's formula.	x	0	1	2	5	f(x)	2	3	12	147	5						
x	0	1	2	5													
f(x)	2	3	12	147													