

**G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.**



**UG DEGREE END SEMESTER EXAMINATIONS - APRIL 2025.**

(For those admitted in June 2021 and later)

**PROGRAMME AND BRANCH: B.Sc., ELECTRONICS**

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
IV	PART - III	CORE	U21EL405	MATHEMATICAL CONCEPTS FOR ELECTRONICS

**Date & Session: 24.04.2025/AN**

**Time :3 hours**

**Maximum: 75 Marks**

<b>Course Outcome</b>	<b>Bloom's K-level</b>	<b>Q. No.</b>	<b>SECTION – A (10 X 1 = 10 Marks)</b> <b>Answer ALL Questions.</b>
CO1	K1	1.	The number of significant digits in the number 204.020050 is. a) 5                                  b) 9                                  c) 8                                  d) 6
CO1	K2	2.	$f(x) = 2x^3 - 9x^2 + 12x + 6$ is a polynomial of degree. a) Two                                  b) Three                                  c) One                                  d) Four
CO2	K1	3.	The convergence of which of the following method is sensitive to starting value? a) Newton-Raphson method                                  b) False position c) Gauss Seidal                                  d) matrix
CO2	K2	4.	Bisection method is also known as _____. a) Regular false method                                  b) Bolzano method c) Section Method                                  d) Regula Method
CO3	K1	5.	In Gauss elimination method for solving a system of linear algebraic equations, triangularization leads to _____. a) Diagonal matrix                                  b) Upper Triangular matrix c) Lower Triangular matrix                                  d) Singular matrix
CO3	K2	6.	Gauss Jordan method is _____ method. a) Direct                                  b) Indirect                                  c) Iterative                                  d) Interactive
CO4	K1	7.	Newton's forward interpolation formula is used to interpolate the value of y is. a) nearer to the beginning                                  b) nearer to the end c) nearer to the middle                                  d) nearer to one third
CO4	K2	8.	Newton's backward interpolation formula is used to extrapolate the values of y to the _____ of the of the last tabulated value. a) right                                  b) left                                  c) centre                                  d) one third
CO5	K1	9.	For interpolation with unequal intervals, we can use _____ to get the derivative value. a) Newton Forward Interpolation                                  b) Newton Backward Interpolation c) Newton Forward Difference                                  d) Lagrange's Interpolation



Course Outcome	Bloom's K-level	Q. No.	<div>SECTION – C (5 X 8 = 40 Marks)</div> <div>Answer <u>ALL</u> Questions choosing either (a) or (b)</div>												
CO1	K3	16a.	Examine the equation $x^4 + 2x^3 - 21x^2 - 22x + 40 = 0$ . <b>(OR)</b>												
CO1	K3	16b.	State, If $\alpha, \beta, \gamma$ are the roots of the equations $x^2 + px^2 + qx + r = 0$ , form the equation whose roots are (i) $\alpha^2 + 1$ , $\beta^2 + 1$ , $\gamma^2 + 1$ (ii). $\alpha\beta$ , $\beta\gamma$ , $\gamma\alpha$ .												
CO2	K4	17a.	Illustrate by Horner's method, the root of the equation $x^2-3x+1=0$ which lies between 1 and 2 correct to two decimal places. <b>(OR)</b>												
CO2	K4	17b.	Estimate a root which lies between 1 and 2 of $f(x) = x^2 + 2x^2 + 10x - 20$ (Leonardo's Equation) using RegulaFalsi method.												
CO3	K4	18a.	Apply the gauss – Jordan method solve the following equations $10x + y + z = 12$ $2x + 10y + z = 13$ $x + y = 5z = 7$ <b>(OR)</b>												
CO3	K4	18b.	Solve the system of equations $8x - y + z - 18 = 0$ $2x + 5y - 2z - 3 = 0$ $X + y + 3z + 6 = 0$												
CO4	K5	19a.	Analyse the following table gives the corresponding values of x and y. prepare a forward difference table and express as a function ox x. also obtain y when $x = 2.5$ <table><tr><td>x</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>y</td><td>7</td><td>10</td><td>13</td><td>22</td><td>43</td></tr></table> <b>(OR)</b>	x	0	1	2	3	4	y	7	10	13	22	43
x	0	1	2	3	4										
y	7	10	13	22	43										
CO4	K5	19b.	Examine given the table <table><tr><td>x</td><td>0</td><td>0.1</td><td>0.2</td><td>0.3</td><td>0.4</td></tr><tr><td><math>e^x</math></td><td>1</td><td>1.1052</td><td>1.2214</td><td>1.3499</td><td>1.4918</td></tr></table> Find the value of $y = e^x$ when $x = 0.38$	x	0	0.1	0.2	0.3	0.4	$e^x$	1	1.1052	1.2214	1.3499	1.4918
x	0	0.1	0.2	0.3	0.4										
$e^x$	1	1.1052	1.2214	1.3499	1.4918										
CO5	K5	20a.	Evaluate Lagrange's interpolation formula, find the value corresponding to $x=10$ from the following table <table><tr><td>x</td><td>5</td><td>6</td><td>9</td><td>11</td></tr><tr><td>y</td><td>12</td><td>13</td><td>14</td><td>16</td></tr></table> <b>(OR)</b>	x	5	6	9	11	y	12	13	14	16		
x	5	6	9	11											
y	12	13	14	16											
CO5	K5	20b.	Justify Lagrange's formula to find $f(x)$ from the following data <table><tr><td>x</td><td>0</td><td>1</td><td>4</td><td>5</td></tr><tr><td><math>f(x)</math></td><td>4</td><td>3</td><td>24</td><td>39</td></tr></table>	x	0	1	4	5	$f(x)$	4	3	24	39		
x	0	1	4	5											
$f(x)$	4	3	24	39											