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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
D 4 0 0 : 04 04 000E/AN			m· 0	1 36 . 25 36 1

Date	& Ses	sion: 2	24.04.2025/AN Time:	3 hours	Maximum: 75 Marks		
Course Outcome	Bloom's K-level	Q. No.	SECTION - A (10 X 1 = 10 Marks) Answer ALL Questions.				
CO1	K1	1.	The number of significant digits a) 5 b) 9	in the number c) 8	204.020050 is. d) 6		
CO1	K2	2.	$f(x) = 2x^3-9x^2+12x+6$ is a polynomial Two b) Three		ne d) Four		
CO2	K1	3.	The convergence of which of the starting value? a) Newton-Raphson method c) Gauss Seidal	following method) False pd) matrix	osition		
CO2	K2	4.	Bisection method is also known a) Regular false method c) Section Method	as b) Bolzan d) Regula			
CO3	K1	5.	In Gauss elimination method for equations, triangularzation lead a) Diagonal matrix c) Lower Triangular matrix	s to	Triangular matrix		
CO3	K2	6.	Gauss Jordan method isa) Direct b) Indirect		ve d) Interactive		
CO4	K1	7.	Newton's forward interpolation fof y is. a) nearer to the beginning c) nearer to the middle	b) neare	to interpolate the value r to the end r to one third		
CO4	K2	8.	Newton's backward interpolation values of y to the of the of a) right b) left		ted value.		
CO5	K1	9.	For interpolation with unequal in derivative value. a) Newton Forward Interpolation c) Newton Forward Difference	b) Newton l	n use to get the Backward Interpolation e's Interpolation		

CO5	K2	10.	The technique used to find the value of the independent variable (usually x) corresponding to a known value of the dependent variable is called a) Interpolation b) Extrapolation c) Partial fraction d) Inverse Interpolation			
Course Outcome	Bloom's K-level	Q. No.	$\frac{\text{SECTION} - B \text{ (5 X 5 = 25 Marks)}}{\text{Answer } \underline{\text{ALL}}}$ Questions choosing either (a) or (b)			
CO1	КЗ	11a.	State If α,β,γ are the roots $2x^3 + 3x^2 + 5x + 6 = 0$, $\alpha + \beta$, $\alpha\beta$			
CO1	КЗ	11b.	Examine, If α, β, γ are the roots of the equation $x^3 + px^2 + qx + r = 0$, find the values of (i) $\sum \alpha^2$, (ii). $\sum \frac{1}{\alpha}$, (iii). $\sum \sum \frac{1}{\alpha\beta}$, (iv). $\sum \alpha^2 \beta^2$, (v). $\sum \alpha^3$			
CO2	КЗ	12a.	Illustrate the real root of the equation $x^3 + x^2 - 1 = 0$ by iteration method (OR)			
CO2	КЗ	12b.	Express, a real root of the equation $x^2-2x-5=0$. Using the bisection method in five stages,			
CO3	K4	13a.	Solve the following system by Gaussian elimination method $x_1 - x_2 + x_3 = 1$ $-3x_1 + 2x_2 - 3x_3 = -6$ $2x_1 - 5x_2 + 4x_3 = 5$ (OR)			
CO3	K4	13b.	Manipulate, the following equation using Jocobi's interation method $20x + y - 2z = 17$ 3x + 20y - z = -18 2x - 3y + 20z = 25.			
CO4	K4	14a.	Simplify that Δ^2 (cos2x) =-4sin ² h cos(2x + 2h) (OR)			
CO4	K4	14b.	Analyze the value of $e^{1.85}$ given $e^{1.7} = 5.4739$, $e^{1.8} = 6.1496$, $e^{1.9} = 6.6859$, $e^{2.0} = 7.3891$, $e^{2.1} = 8.1662$, $e^{2.2} = 9.0250$, $e^{2.3} = 9.9742$,			
CO5	K5	15a.	x 0 2 3 5 6 f(x) 1 19 55 241 415 (OR)			
CO5	K5	15b.	Justify the Given $log_{10}654 = 2.8156$, $log_{10}658 = 2$, 8182 , $log_{10}659 = 2.8189$ and $log_{10}661 = 2.8202$. Find the value of $log_{10} 656$ using Newton's divided difference formula (OR) using the following table find f(656).			
			0.0156 0.0100 0.0100 0.0000			
			x 654 658 659 661			

Course Outcome	Bloom's K-level	Q. No.	$\frac{\text{SECTION} - C \text{ (5 X 8 = 40 Marks)}}{\text{Answer } \underline{\text{ALL}}} \text{ Questions choosing either (a) or (b)}$				
CO1	КЗ	16a.	Examine the equation $x^4 + 2x^3 - 21x^2 - 22x + 40 = 0$.				
CO1	КЗ	16b.	State, If α,β,γ 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.				
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 $10x + y + z = 12$ $2x + 10y + z = 13$ $x + y = 5z = 7$ (OR)				
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 $x = 2.5$				
			x 0 1 2 3 4				
			y 7 10 13 22 43				
CO4	K5	19b.	(OR) Examine given the table				
	110	150.	x 0 0.1 0.2 0.3 0.4				
			e^x 1 1.1052 1.2214 1.3499 1.4918				
			Find the value of $y = e^x$ when $x = 0.38$				
CO5	K5	20a.	Evaluate Lagrange's interpolation formula, find the value corresponding to x=10 from the following table				
			x 5 6 9 11				
			y 12 13 14 16 (OR)				
CO5	K5	20b.	, ,				
			x 0 1 4 5				
			f(x) 4 3 24 39				