Reg. No. | | | | | | | | |

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

UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2025.

(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: B.Sc., PHYSICS

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
V	PART - III	CORE ELECTIVE - 2	U23PH5E2A	C PROGRAMMING AND NUMERICAL METHODS

Date & Session: 11.11.2025/FN **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.	In the Gauss Elimination method, the coefficient matrix is transformed to which of the following forms? a) Diagonal form b) Identity matrix form c) Upper triangular form d) Null matrix form
CO1	K2	2.	Choose transcendental equation in the following. a) $x^3 - 3x + 1 = 0$ b) $3x - \cos x - 1 = 0$ c) $x^3 + x^2 - 1 = 0$ d) $x^2 - 2x - 3 = 0$
CO2	K1	3.	The Principle of Least Squares is primarily used in: a) Solving differential equations b) Forward and backward interpolation c) Curve fitting and regression analysis d) Solving nonlinear equations
CO2	K2	4.	Simpson's 3/8 rule for numerical integration can be applied only if the number of subintervals is: a) A multiple of 2 b) A prime number c) A multiple of 3 d) An odd number
CO3	K1	5.	What is the primary purpose of developing an algorithm before writing a program? a) Make the program faster b) Avoid using high-level languages c) Plan & organize the solution logically d) Directly convert it into a flowchart
CO3	K2	6.	If A is a 2×2 matrix and I is the 2×2 identity matrix, what is the result of A×I? a) A transpose b) Matrix A c) Zero Matrix d) Not defined
CO4	K1	7.	Which symbol is used to terminate all statements in the executable parts of a C program? a) Full stop (.) b) Semi colon (;) c) Comma (,) d) Colon (:)
CO4	K2	8.	Find the meaning of the relational operator (!=). a) is less than b) is equal to c) is greater than d) is not equal to
CO5	K1	9.	Which of the following statements can always be replaced by a series of if...else statements in C? a) while b) for c) do …. while d) switch
CO5	K2	10.	Which of the following is an entry-controlled loop statement in C? a) while b) do …. while c) goto d) switch

Course Outcome	Bloom's K-level	Q. No.	**SECTION – B (5 X 5 = 25 Marks)** **Answer ALL Questions choosing either (a) or (b)**
CO1	K3	11a.	How an algebraic or a transcendental equation is solved by Bisection method? **(OR)**
CO1	K3	11b.	Applying Gauss Jordan method solve the following equations. 5x+4y=15; 3x+7y=12.
CO2	K3	12a.	Find $(5)^{1/2}$, using Newton's –Raphson Formula. **(OR)**
CO2	K3	12b.	Present the principle of least squares method for fitting a straight line to a given set of data.
CO3	K4	13a.	Examine the flow chart to find average of set of numbers. **(OR)**
CO3	K4	13b.	Examine the flow chart to convert Celsius to Kelvin scale of temperature.
CO4	K4	14a.	Classify basic types of constants in C Programming. **(OR)**
CO4	K4	14b.	Examine functioning of increment and decrement operators in C Programming.
CO5	K5	15a.	Justify the importance of 'goto' statement in C Programming. **(OR)**
CO5	K5	15b.	Compare one dimensional and two dimensional arrays in C Programming.

Course Outcome	Bloom's K-level	Q. No.	**SECTION – C (5 X 8 = 40 Marks)** **Answer ALL Questions choosing either (a) or (b)**
CO1	K3	16a.	Find the positive root of $x^4=x+10$ correct to three decimal places using Newton's Raphson Method. **(OR)**
CO1	K3	16b.	Solve the system of equations by Gauss-elimination method. 10x-2y+3z=23; 2x+10y-5z=-33; 3x-4y+10z=41.
CO2	K4	17a.	Appling Newton's forward interpolation, find θ at x=43. x: 40, 50, 60, 70, 80, 90 θ: 184, 20, 226, 250, 276, 304 **(OR)**
CO2	K4	17b.	Compute the value of the definite integral of ln x dx (lower limit 4 and upper limit 5.2) using Simpson's 1/3 rule.
CO3	K4	18a.	Examine the flow chart to find greatest and smallest number in the given set of numbers. **(OR)**
CO3	K4	18b.	Examine the flow chart to sorting set of numbers in ascending and descending order.
CO4	K5	19a.	Discuss different fundamental data types in C Programming. **(OR)**
CO4	K5	19b.	Discuss different types of arithmetic operations in C Programming.
CO5	K5	20a.	Compare 'if, if-else and nested-if statements in C Programming. **(OR)**
CO5	K5	20b.	Discuss simple 'for' statement in C Programming with example.