

(Programming in C & Numerical Analysis - I) (New Course)

Seat No. \_\_\_\_

Faculty Code: 003 Subject Code: 1015002

Time :  $2\frac{1}{2}$  Hours] [Total Marks: 70 Instruction: (1) All the questions are compulsory. (2) Answer any FIVE questions out of TEN. (3) Numbers written in the right indicate marks of the questions. 1(A) Answer the following questions. [04]1. In which header file definition of sqrt() function is included? 2. What is the use of "\t" in printf()? 3. Write a symbol of ampersand. 4. Who invented BCPL language? In which year it was invented? **(B)** Answer the following question. [02]1. Write a C program to calculate area of a circle when radius is not given. **(C)** Answer the following question. [03] 1. Explain scanf function with an example. **(D)** Answer the following question. [05] 1. Explain if statement with example. [04] 2(A) Answer the following questions. header file. 1. scanf () belongs to 2. Who invented C language? In which year it was invented? 3. Write the output of printf("\nI\n\tLOVE\n\t\tMY\n\t\tINDIA."). 4. What is the numerical value of 10/3 in C – language? [02]**(B)** Answer the following question. 1. Write a hierarchy of operators in the table. [03] **(C)** Answer the following question. 1. Explain printf function with an example.

<b>(D)</b> 1.	Answer the following question. [05] Explain the meaning and provide list of LOGICAL OPERATORS being used in C, also give proper examples for the same.
3(A)	Answer the following questions. [04]  1. The operator && is an example of operator.  2. How many bytes are occupied by float variable.  3. Type format specifier for long integer variable is  4. What is the range of integer constants?
• •	Answer the following question. [02] Explain void data type.
	Answer the following question. [03] Explain break statement in C.
	Answer the following question. [05] Write a program to calculate compound interest for given principal, rate of interest and years.
` ,	Answer the following questions. [04]  1. Give general form of DO WHILE loop.  2. Write the range of float data type.  3. %Lf is the specifier of which type of data?  4. Which format specifier to use print character.
	Answer the following question. [02] Draw a flow chart of for loop.
( <b>C</b> )	Answer the following question. [03] Give an example of User Defined Function
<b>(D)</b>	Answer the following question. [05] Explain the syntax and usage of while loop in C? Give proper examples with output.
1. 2.	Answer the following questions. [04] Write the syntax of one dimensional array. C program starts reading rom By default the first element numbered in the array is refers to the standard I/O header le containing standard input and output functions.
	Answer the following question. [02]  Describe the meaning of following declaration:  float table [5] [3];
( <b>C</b> )	Answer the following question. [03] Explain the syntax of the One Dimensional Array with proper example.

	Answer the following question. [0: Write Program to input and output 10 X 2 matrix.	5]
	Answer the following questions. [04is a special function used by C system to tell the computer where prograstarts.	-
	C programs are converted into machine language with the help of A header file is:	
	<ul> <li>(a) a file that contains standard library functions.</li> <li>(b) a file that contains definitions and macros.</li> <li>(c) a file that contains user-defined functions.</li> <li>(d) a file that is present in current working directory.</li> </ul> Choose correct option.	
4.	File extension of source code in C language is	
` '	Answer the following question. [02] What is the meaning of compile time initialization?	2]
	Answer the following question. [03] Explain macro with argument in C language with syntax and example.	3]
	Answer the following question. [08] Explain the methods to declare and initialize the Two Dimensional Array.	5]
1. 2. 3.	Answer the following questions. [0 In which method matrix is transformed into upper triangular matrix? Write name of any two iterative methods. Find value of $(1 + \Delta)(1 - \nabla)$ . Gauss Jordan method is modification of	4]
	Answer the following question. [02] Explain how to fit the curve of the type $y = ax^b$ .	2]
` '	Answer the following question. [0. Explain Jacobi's Method.	3]
<b>(D)</b> 1.	Answer the following question. [0] Explain Least squares principle and Obtain normal equations for a second degree curve.	-
1. 2. 3.	Answer the following questions. [0] Write name of any two direct methods. Write linear law of the equation $y = ab^x$ . According to Factorisation Method, what is U? If $y = 2x + 5$ is the best fit for 8 pairs of values $(x, y)$ by method of least square a $\sum y = 120$ then find $\sum x$ .	9 <b>4</b> ] nd
` '	Answer the following question. [02 Explain Linear Law.	.]

- (C) Answer the following question.

  1. Solve the system

  x + y + 5z = 7, 2x + 10y + z = 13, 10x + y + z = 12

  By the modified form of Gauss Elimination Method.
  (D) Answer the following question.

  1. Explain: Crout's Method.

  9(A) Answer the following questions.

  1. Write relation between A & E
- 1. Write relation between Δ & E.
  2. Define: Interpolation
- 3. The nth difference of a polynomial of degree n is \_\_\_\_\_
  4. δ = \_\_\_\_\_ in the form of E.
- (B) Answer the following question. [02]

  1. If the interval of differencing is unity then prove that  $\Delta \frac{2^x}{x!} = \frac{2^x(1-x)}{(x+1)!}$
- (C) Answer the following question. [03]1. Find the missing values in the following table of values of x andy.

X	0	1	2	3	4	5	6
у	-4	-2	-	-	220	546	1148

- (D) Answer the following question. [05]
  - 1. Derive Gregory Newton Backward Interpolation Formula.
- 10(A) Answer the following questions. [04]
  - 1. ΔV equals to
  - 2. Write relation between E and D.
  - 3.  $\Delta^6 x^{(5)} =$
  - 4. In usual notation  $\mu =$
  - (B) Answer the following question. [02]
  - 1. In usual notation prove that  $\Delta + \nabla = \frac{\Delta}{\nabla} \frac{\nabla}{\Delta}$
  - (C) Answer the following question. [03]
  - 1. Prove that  $\mu^2 = 1 + \frac{\delta^2}{4}$
- (D) Answer the following question. [05]
- 1. In the following table one value is incorrect and y is cubic polynomial in x:

X	0	1	2	3	4	5	6	7
V	25	21	18	18	27	45	76	123

Construct a difference table for y and use it to locate and correct the wrong value.