



## Shree H.N. Shukla College of Science

### M. Sc (Mathematics) (Sem-3)

#### Question Bank

#### MATH.CMT-3001:Prog. in C & Numerical methods

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- (1) Write a short note about basic structure of C program.
- (2) Explain about if...else statement and using it write a program which can find a largest number from given three number.
- (3) Write a short note about importance of C language.
- (4) Write a program which can print first 100 primes.
- (5) Explain about while loop statement with its format and syntax.
- (6) Write a program which can display tables of 11 to 15 and 16 to 20.
- (7) Explain n-G forward interpolation polynomial and derive the formula

$$P(x) = f_1 + \Delta f_1 / h (x-x_1) + \Delta^2 f_1 / 2h^2 (x-x_1) (x-x_2) + \dots + \Delta^{n-1} f_1 / (n-1)! h^{n-1} (x-x_1) (x-x_2) \dots (x-x_{n-1})$$

Using this find the formula for an unknown function f given by

x	0	1	2	3	4	5
f(x)	-2	-3	-2	1	6	13

- (8) Write the program for Gauss – Elimination method .
- (9) Discuss about N-R method and using its formula find the approximate value of  $\sqrt[3]{7}$  by taking Initial  $x_0 = 2$ .
- (10) Write a program which can find gcd of four integers and it can use to find gcd of two Integers x and y as a sub – program.
- (11) Write a program of false position method .
- (12) Explain about for loop statement with its format and syntax. Also write a program which Includes loop in a loop to print 1 to 100 integers in column form .
- (13) Write a program which can read two matrices A and B of the size m x n and n x p . Also it can find the product AB of these two matrices .

(14) Discuss about Gauss – Seidel method to solve a system of linear equation :

$$a_{11} x_1 + a_{12} x_2 = b_1$$

$$a_{21} x_1 + a_{22} x_2 = b_2$$

(15) Explain Lagrange interpolation polynomial and derive the formula

$$P(x) = \sum_{k=1}^n [ f_k \prod_{\substack{i=1 \\ i \neq k}}^n \frac{(x-x_i)}{(x_k-x_i)} ] . \text{ using this find the unknown value for the following}$$

Function :

x	-1	1	4	5	3
f(x)	8	-2	-2	2	F(3) = ?

(16) Discuss about bisection method . Also write the program for this method .

(17) Write the program for Gauss – Elimination method .

(18) Write a note about development of C language .

(19) Write a program which can find GCD and LCM of given two integers .

(20) Write a program which can print 200 to 101 integers in descending order .

(21) Discuss about one – dimensional array and initialization for one – dimensional array.

(22) Write a note about secant method to solve the equation  $f(x) = 0$  .

(23) Write a program which can read an integer and it can print all the divisors of the

Given integers .

(24) Explain about arithmetic operators .

(25) Write a program which can print tables of 11 to 20 .

(26) Write a program which can read an integer and it can check whether given integer is a prime no or not ?

(27) Write a program which can print two matrices of same size and it can find the sum of these

Two matrices.

(28) Write a note about user defined functions with example .

(29) Write a program which can read coordinate of three points of a triangle in R2 and it can

Check the given triangle is right angled triangle or not .

(30) Discuss about recursion of a function in itself .

