



HK-003-016301 Seat No. _____

M. Sc. (Sem. III) (CBCS) Examination

May / June – 2017

Mathematics : CMT - 301

(Programming in C and Numerical Methods)

(Old Course)

Faculty Code : 003

Subject Code : 016301

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instructions :

- (1) Answer all the five questions.
- (2) Each question carries 14 marks.

1 Answer any seven : 7×2=14

- (1) Give definitions of Machine Language and Higher level language.
- (2) Write down basic structure (six sections) of a C program.
- (3) Define terms : Program, Compiler.
- (4) Write down characters whose ASCII codes are 68 and 122.
- (5) Give definition of flow chart.
- (6) Write a program which can print 300 to 201 integers in decreasing form.
- (7) Give definition of identifier. Also give examples of a valid identifier and an invalid identifier.
- (8) Write a program which can print a to z small letters.

(9) Determine value of followings :

(when $a = 25$, $b = 50$ and $c = -30$).

(i) $a > b \ \&\& \ a < c$

(ii) $a == c \ \|\| \ b > a$

(10) Remove unnecessary paranthesis from the following arithmetic expressions :

(i) $((x - (y/5) + z) \% 8) + 25$

(ii) $(m * n) + (-x/y)$

2 Attempt any two : **2×7=14**

- (a) Write down a note about development of C language.
- (b) Discuss about recursion of a function in itself by an appropriate program.
- (c) Explain about array and initialization of array.

3 Answer any one : **1×14=14**

- (a) Discuss about false position method. Also write the program for this method.
- (b) Explain about Gauss Elimination method and using it solve the following system of equations :

$$x_1 + x_2 + x_3 + x_4 = 10$$

$$x_1 + x_2 + 4x_3 + 5x_4 = 20$$

$$2x_1 + 3x_2 + 4x_3 + 5x_4 = 30$$

$$x_1 + 4x_2 + 16x_3 + 64x_4 = -14$$

- (c) Discuss about N-R method and using formula find the real root of the equation $f(x) \equiv x^3 - 7 = 0$ by taking initial root $x_0 = 2$.

4 Answer any two : 2×7=14

- (a) Write a program which can read two integers and it can find gcd as well as lcm of given two integers.
- (b) Write a program which can print first 100 or more primes.
- (c) Write a program which can read date and month of 2017 and it can declare associate day of the date.
(Assume 1st Jan. 2017 is Sunday).

5 Attempt any two : 2×7=14

- (a) Explain about for loop statement with its format, syntax and an example of a C program which include for loop.
- (b) Explain about while loop statement with its format, syntax and an appropriate example (program).
- (c) Write a program which can read two square matrices A , B and it can find sum and product ($A + B$ and AB) of these both matrices.
- (d) Write a program which can display tables of 1 to 10.
- (e) Find new system for following system of equations, so we can apply Gauss-Seidel method. Also solve it by the Gauss-Seidel method (new system) :

$$x_1 + x_2 + x_3 = 6$$

$$x_1 + 2x_2 + 3x_3 = 14 \quad \text{and}$$

$$x_1 + 4x_2 + 9x_3 = 36.$$
