JW-003-1015002 Seat No. _____

B. Sc. (Sem. V) (CBCS) (w.e.f.-2016) Examination

October - 2019

Mathematics Paper BSMT-06(A)

(Theory)

[Programming in C & Numerical Analysis - I]

Faculty Code : 003
Subject Code : 1015002

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

1 (a) Objective type questions : **4**

(1) Range of the integer data type is _____.

(2) Which symbol is used as a statement terminator in C ?

(3) What will be the maximum size of a float variable ?

(4) The operator && is an example of _____ operator.

(b) Answer any one : **2**

(1) Explain scan f().

(2) Explain type declaration.

(c) Answer any one : **3**

(1) Explain conditional operator with example.

(2) Write the rules for constructing Real Constant.

(d) Answer any one : **5**

(1) Write a programme to find out Class if the percentage is input through keyboard. Write it using Logical operator for the following :

Percentage	Class
Between 60 to 70	First Class
Between 50 to 60	Second Class
Between 40 to 50	Third Class
Less than 40	Fail

(2) Write a programme to find the largest of three given numbers.

2 (a) Objective type questions : **4**

(1) Which is decision making loop for entry control ?

(2) Write the range of signed character.

(3) How many bytes occupies Doubles data type in memories ?

(4) Which format specifier to use new line ?

(b) Answer any one : **2**

(1) Draw a flow chart of for loop.

(2) Write general form of do.....while loop.

(c) Answer any one : **3**

(1) Explain Break statement.

(2) Explain Continue statement.

(d) Answer any one : **5**

(1) Ten different positive / negative numbers input through keyboard. Write a program to find out the sum of only positive numbers using continue statement.

(2) Explain go to statement with example.

3 (a) Objective type questions : **4**

(1) What is C processor ?

(2) List out types of array.

(3) What is array ?

(4) Write syntax of two dimensional array.

(b) Answer any one : **2**

(1) Write general form of Macro with arguments.

(2) Describe the meaning of following declaration : float table [5][3].

(c) Answer any one : **3**

(1) Explain int marks [100].

(2) Write use of the following commands :

(i) Alt + x

(ii) Alt + F9

(iii) F9

(iv) F3

(v) F2

(vi) Alt + F3

(d) Answer any one : **5**

(1) Explain One dimensional array with example.

(2) Explain Two dimensional array with example.

4 (a) Answer the following : **4**

(1) Write the name of any one of iteration method.

(2) What is the linear law of the curve xy = ax + by.

(3) What is the linear law of the curve $y = ab^x$.

(4) What stands for L and U in a Factorization method, every square matrix A can be factorized into form A=LU ?

(b) Attempt any one out of two : **2**

(1) Explain linear law.

(2) Write the names four of direct method.

(c) Attempt any one out of two : **3**

(1) Solve the system of equations :

$4x - y - z = -7$

$x - 5y + z = -10$ using Gauss-Jordan method.

$x + 2y + 6z = 9$

(2) Fit a straight line y = ax + b to following set of observation :

x	1	2	3	4	5
y	14	27	40	55	63

(d) Attempt any one out of two : **5**

(1) Explain Least square Principles and using it find Normal equation of the curve $y = ax^2 + bx + c$.

(2) Explain Crout's method for system of linear equation.

5 (a) Attempt the following : **4**

(1) If $f(x) = x^2 + 2x + 2$ and interval of differencing is unity, then find $\Delta f(x)$.

(2) Define shift operator.

(3) What is the algebraic sum of the errors in any differences column ?

(4) Express in $f(x)=x^3-2x^2 + x - 1$ in factorial notation (where $h = 1$).

(b) Attempt any one out of two : **2**

(1) In usual notation prove that $\Delta a^{cx+d} = \left(a^{ch} - 1\right)^3 a^{cx+d}$.

(2) Evaluate $\Delta\left[f(x)g(x)\right]$, where difference of interval is h.

(c) Attempt any one out of two : **3**

(1) Evaluate $\Delta^2\left[\frac{1}{x(x+4)(x+8)}\right]$.

(2) In usual notation prove that $\Delta^r x^{(r)} = r!h^r$.

(d) Attempt any one out of two : 5

(1) Derive Gregory Newton's forward interpolation formula.

(2) Find a polynomial which take the following value using Backward interpolation formula.

x	1	3	5	7	9	11
y	3	14	19	21	23	28

Also compute y_x at x = 2,12