B. Sc. (Sem. - V) (CBCS) Examination

May/June – 2015

Maths. BSMT - 502 (A)
(Programming In C & Numerical Analysis)

Faculty Code : 003
Subject Code : 001514

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

1   Answer All Questions :   **20**

(1)   Character set of C language contains ?

(a)   Alphabets   (b)   Digits

(c)   Special Symbols   (d)   All of these

(2)   A Variable name can have ?

(a)   under score   (b)   blank spaces

(c)   double   (d)   char

(3)   In C language, one of the following is not a valid data type :

(a)   Long   (b)   Float

(c)   Double   (d)   Char

(4)   The format string %lf is used for ?

(a)   Float   (b)   Double

(c)   Unsigned int   (d)   Long double

(5) A variable of type unsigned int can have a value in the range ?

    (a) −32768 to +32767   (b) 0 to 32767

    (c) 0 to 65535   (d) −32767 to +32767

(6) Which data type is not a primary data type ?

    (a) Int   (b) Array

    (c) Float   (d) Char

(7) Which of the format string is not valid ?

    (a) %ld   (b) %lf

    (c) %lu   (d) %lc

(8) Which is the valid string data ?

    (a) 'A'   (b) A

    (c) "A"   (d) None of these

(9) How much memory is required to store a value of type double ?

    (a) 4 bytes   (b) 6 bytes

    (c) 8 bytes   (d) 10 bytes

(10) The modifier which is used to declare a variable as constant ?

    (a) Short   (b) Signed

    (c) Unsigned   (d) cons

(11) $\Delta^6 (1-x)(1-2x^2)(1-3x^3) =$

    (a) $6h^6 6!$ (b) $-36h^6$

    (c) $-6h^6 6!$ (d) $36h^6$

(12) In Gauss – Elimination method coefficient matrix reduce into

    (a) Upper triangular Matrix

    (b) Lower triangular Matrix

    (c) Unit Matrix

    (d) Digonal Matrix

(13) $E^n e^x =$

    (a) $h^n e^x$ (b) $n! h^n e^x$

    (c) $n!(e^h - 1)e^x$ (d) $\left(e^h - 1\right)^n e^x$

(14) Relation between E and D

    (a) $E = e^{-hD}$ (b) $E = e^{hD}$

    (c) E = log h D   (d) E = log D

(15) $\Delta^6 x^{(5)} =$

    (a) 0   (b) 1

    (c) 5!   (d) 6!

(16) Relation between E and ∇

    (a) $E = (1 - \nabla)^{-1}$ (b) $\nabla = 1 - E^{-1}$

    (c) $E^{-1} = 1 - \nabla$ (d) All of these

(17) Which of the following is not true

(a) $\Delta [f(x) + g(x)] = \Delta f(x) + \Delta g(x)$

(b) $\Delta [f(x) g(x)] = f(x+h) \Delta g(x) + g(x) + \Delta f(x)$

(c) $\Delta [f(x) g(x)] = [\Delta f(x)] g(x)$

(d) $\nabla [f(x) + g(x)] = \nabla f(x) + \nabla g(x)$

(18) In Gauss - Jordan method coefficient matrix reduced into

(a) Raw Matrix   (b) Diagonal Matrix

(c) Column Matrix   (d) None of these

(19) Which of the following expression is true

(a) $\Delta f(x) = f(x + h) - f(x)$

(b) $\nabla f(x) = f(x) - f(x - h)$

(c) $\delta f(x) = f(x+h/2) - f(x-h/2)$

(d) All of these

(20) $E^3 f(x) =$

(a) $3 f(x + h)$ (b) $f(x + 3h)$

(c) $f(x - 3h)$ (d) None of these

2 (a)   Answer **any Three :**   **6**

   (1)   Explain with example do while loop

   (2)   Explain Long and Short Integers.

   (3)   Explain printf ( )

   (4)   Explain Type declaration

   (5)   What is the difference between while and do while loop ?

   (6)   Explain Float and Double.

(b)   Answer **any Three :**   **9**

   (1)   Write a C Program to find given number is positive, negative or zero

   (2)   Explain Continuous statement

   (3)   Write a program to find out even numbers between 50 to 70

   (4)   Write a program to find out simple interest

   (5)   Write the rules to make integers in C with proper example.

   (6)   Explain conditional operator.

(c)   Answer **any Two :**   **10**

   (1)   Explain Two Dimensional Arrays.

   (2)   If five digit number is input through keyboard. Write a program to calculate the sum of it's digit.

   (3)   Write a program to generate series 2 , 2 ,4, 8 ....

   (4)   Write short note on History of C

   (5)   Explain for loop

3 (a) Answer **any Three** : 6

    (1) Find the value of $\Delta \tan^{-1} x$ where h = 1

    (2) Prove that $\Delta \nabla = \Delta - \nabla$.

    (3) If the interval of differencing is unity, prove that

$$\Delta f(x) = \frac{-\Delta f(x)}{f(x) f(x+1)}$$

    (4) Write normal equation of the curve y = a x + b

    (5) If the interval of differencing is inity

    Prove that $\Delta \left(\dfrac{2^x}{x!} \right) = \dfrac{2^x (1-x)}{(x+1)!}$

    (6) Prove that $\dfrac{\Delta^2}{E^2} = E^{-2} - 2E^{-1} + 1$

(b) Answer **any Three** : 9

    (1) Prove that $\left(\Delta^2 E^{-1} \right) \left(x^2 + 2x \right) = 2$

    (2) Prove that $\mu^2 = 1 + \dfrac{1}{4} \delta^2$

    (3) Find $\Delta^2 \left(\dfrac{1}{x(x+4)(x+8)} \right)$

    (4) Solve the system of equation using Gauss elimination method

        3 x + y −z = 3

        2 x − 8 y + z = −5

        X − 2 y + 9 z = 8

(5) Prove that $\Delta^2 \cos 2x = -4 \sin^2 h \cos 2(x+h)$

(6) Express $p(x) = 3x^4 - 4x^3 + 6x^2 + 2x + 1$ as a factorial polynomial

(c) Answer **any Two** : 10

(1) Explain Gregory - Newton backward interpolation formula

(2) Explain method of Factorization method

(3) Find a cubic polynomial which takes the following set of values :

(0, 1), (1, 2), (2, 1) and (3, 10). Also represent polynomial in factorial notation.

(4) Explain principle of least square using it find an normal equation to best fit the curve $y = ae^{bx}$, where a and b are constant

(5) Explain Gauss Jacobi method of iteration

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