SECOND SEMESTER B.Sc. DEGREE (SUPPLEMENTARY) EXAMINATION DECEMBER 2012

(CCSS)

Mathematics

MM 2B 02—INFORMATICS AND MATHEMATICAL SOFTWARE

Time : Three Hours   Maximum : 30 Weightage

Part I

Answer all *questions.*

1. A group of _____ bits is called a byte.

   (a) 2.   (b) 4.

   (c) 8.   (d) 64.

2. S = "hello world"

   Print s[1]

   What will be the output ?

   (a) h.   (b) e.

   (c) d.   (d) 1.

3. Modify the expression 5 + 3* 2 to get result as 16.

4. The statement used to skip the rest of a block and go to the beginning again is

   (a) Break.   (b) Continue.

   (c) If.   (d) For.

5. From numpy import*

   a = arrange (0.0,1.0, 0.25)

   then the output is _____

   (a)   [0, 0.25,1].

   (c) [0, 0.25, 0.5, 0.75].   (d) None of these.

6. From numpy **import***

    a = array ([1 2 3])

    b = array ([4 5 6])

    c = dot (a, b)

    print c

    then output is _____

    (a) [4 10 18].   **(b) 32.**

    (c) [4 5 6].   **(d) 21.**

7. From pylab **import***

    a =poly ld **([3 4 5])**

    b =poly ld **([6 7])**

    c = a* b

  Output will be

    (a) $3x^2 + 4x + 5$.   (b) $3x^2 + 10x + 12$.

    (c) $18x^3 + 45x^2 + 58x + 35$.   (d) $18x^3 - 45x^2 + 58x - 35$.

8. **The formula for** Newton-Raphson **method is**

9. **From** pylab **import***

    th = linspace **(0, 2*pi, 100)**

    r = 5*ones **(100)**

    polar **(th, r)**

    show **( )**

  The output will be

    (a) Square.   **(b) Circle.**

    (c) Ellipse.   **(d) Bar diagram.**

10. **Output of the command** $\sin x + \arctan y$ **is**

11. **Write the latex command for getting** $\sqrt{x} + y^2$.

12. **Write the latex command of getting** $\int_{-1}^{5} x^3 dx.$

                                                      (12 x   = 3 weightage)

Part II

Answer all *questions.*

13. What is the difference between multi-tasking and multi-user systems ?

14. Write two features of high level languages.

15. Distinguish between a string and a list.

16. Distinguish between BREAK and CONTINUE statements.

17. Write the function to find product of two numbers.

18. Write a python statement to generate a 3 x 2 array filled with zeroes.

19. Write python statements for creating two polynomials of degree 3 and finding their product.

20. Type set $x^2 + y^2 = 1$.

21. Write a program to create an array with elements 10, 100, 1000 and 10000. Use it to print the common logarithm of each and get the output as an array.

$(9 \; 1 = 9 \; \text{weightage})$

Part III (Short Answer Type Questions)

Answer any five *questions.*

22. Write a python program to print multiplication table of 5.

23. Write a python program to calculate area of a circle.

24. Write a python program to evaluate Sine series.
$\sin x = x - \dfrac{x^3}{3!} + \dfrac{x}{5!} - \dots$ and to plot the curve.

25. Write a program to find the roots of the equation $x^3 - 10x^2 + 5 = 0$ using bisection method.

26. Write a program to plot the ellipse $x = a \cos t; \; y = b \sin t$ with $a = 2$ and $b = 3$.

27. How environments are defined ?

28. Explain two ways of typesetting mathematical formulae.

$\text{x } 2 = 10 \; \text{weightage})$

Part IV (Essay Type Questions)

Answer any two *questions.*

29. (a) Write a python function to calculated G.C.D. of two numbers.

(b) Define a string S = 'king'. Write python code for printing it in reverse order.

Turn over

30. Write a function to find the inverse of the matrix $\begin{pmatrix} 4 & 1 & -2 \\ 2 & -3 & 3 \\ -6 & -2 & 1 \end{pmatrix}$. Use it to solve.

$$4x + y - 2z = 5$$

$$2x - 3y + 3z = -1$$

$$-6x - 2y + z = -8$$

31. Prepare a sample index using Latex.

$$(2 \times 4 = 8 \text{ weightage})$$