

D 31865

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Name.....

Reg. No.....

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) l.
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]. (b) [0, 0.25, 0.5, 1.0].
(c) [0, 0.25, 0.5, 0.75]. (d) None of these.

Turn over

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 `\sinx + \arctan y` is _____.

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

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

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 3×2 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 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.
 $\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \dots$ 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.

(5 × 2 = 10 weightage)

Part IV (Essay Type Questions)

Answer any two questions.

29. (a) Write a python function to calculate G.C.D. of two numbers.
 (b) Define a string S = 'king'. Write python code for printing it in reverse order.

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 × 4 = 8 w