K16U 1727

Reg. No. : .....

Name : .....

V Semester B.Sc. Degree (CBCSS-2014 Admn.-Regular) Examination, November 2016
CORE COURSE IN PHYSICS
5B 09 PHY : Python Programming

Time : 3 Hours Max. Marks : 40

SECTION – A

Answer **all**. Very short answer type. **Each** question carries **1** mark.

1. What will be the output of given program ?
   S = abcd
   print s[2:]
2. Write the syntax of linspace function.
3. What is the use of imshow() function ?
4. Write Newton-Raphson method formula. **(4×1=4)**

SECTION – B

Answer **any seven**. Short answer type. **Each** question carries **2** marks.

5. With example, explain mutable and immutable data types.
6. Explain exception handling.
7. Write a program to print power of 2, upto 1024 using for loop.
8. What is meant by random module in numpy ?
9. How can we compute the inverse of a square matrix in python ?
10. Explain pie charts.
11. Write a program to plot an ellipse.

P.T.O.

12. What is the method of bisection ?
13. How will you evaluate the function f(x) where f(a) is known and x is in the vicinity of the point a ?
14. What is the method of least square fitting ? **(7×2=14)**

SECTION – C

Answer **any four**. Short essay/problem. **Each** question carries **3** marks.

15. Write a note on modules. With example explain two different methods to import a module.
16. Write a program to check whether a year is leap year or not.
17. Create two arrays using arrange() and multiply them in element wise using python.
18. Explain polar plots.
19. Write a program to calculate sine and cosine of x using Taylor series.
20. Differentiate $5x^2 + 3x + 5$ numerically and evaluate at $x = 2$ and $x = -2$. **(4×3=12)**

SECTION – D

Answer **any two**. Long essay type. **Each** question carries **5** marks.

21. Explain the different iteration methods in python.
22. Explain the different arithmetic operations performed on arrays.
23. Write program to draw a circle which satisfies the equation.
    1) $x^2 + y^2 = a^2$
    2) $x = a\cos\theta$ and $y = a\sin\theta$
    Draw the outputs.
24. Explain ordinary differential equations and write two solving methods of it. **(2×5=10)**

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