

**C 83631**

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Name.....

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Reg. No.....

**SECOND SEMESTER M.Sc. DEGREE EXAMINATION, JUNE 2015**

(CUCSS)

Physics

**PHY 2C 08 – COMPUTATIONAL PHYSICS**

(2012 Admissions)

Time : Three Hours

Maximum : 36 Weightage

**Section A**

*Answer all questions.*

*Each question carries 1 weightage.*

1. What is a string? How it differs from tuple?
2. What are the relevant functions of file?
3. Explain the conditional execution in Python.
4. Discuss about the arithmetic operators in Python.
5. Explain how 'infinite looping' is achieved in python language.
6. Discuss savings and restoring's arrays in Python.
7. What are the basic arithmetic operations on arrays?
8. Write down the general format of plot ( ) function in Python.
9. What is sampling theorem? Explain its importance.
10. Briefly explain interpolation with cubic spline.
11. Give the principle of Monte Carlo Simulation.
12. Discuss the steps involved in simulation.

(12 × 1 = 12 weightage)

**Section B**

*Answer any two questions.*

*Each question carries 6 weightage.*

13. List and explain the different dictionary methods in Python.
14. Explain with suitable example, how one dimensional array can be indexing slicing and iterating?

**Turn over**

15. Explain the different steps to solve ordinary second order differential equation with a periodic boundary condition by relaxation method.
16. What is logistic map? Give its principle. What are the characteristics of logistic equation and map?

(2 × 6 = 12 weightage)

### Section C

Answer any **four** questions.

Each question carries 3 weightage.

17. Write a program in Python to find largest and smallest in a set of numbers.
18. Write a program in Python to solve quadratic equation.
19. Write down an algorithm for  $p$  using Monte Carlo Simulation.
20. Find the inverse of  $f(x) = \log x$ .
21. Explain why Relaxation method is preferred over shooting method in solving ordinary second order differential equation.
22. What is impact parameter? Obtain an expression for angle of deflection in Rutherford Experiment.

(4 × 3 = 12 weightage)