C 4676 (Pages : 2) Name.....

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE EXAMINATION, JUNE 2016

(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. Explain with suitable example the print statement in Python.
2. With suitable example explains set objects in Python.
3. Discuss the general syntax of a while loop in Python.
4. Discuss about the arithmetic operators in Python.
5. Explain how 'infinite looping' is achieved in python language.
6. Discuss any one method of finding an inverse function in Python.
7. Explain the different uses of tuples.
8. Write down the general format of plot () function in Python.
9. Discuss interaction by importance sampling.
10. Briefly explain interpolation with cubic spline.
11. State and explain sampling theorem.
12. With suitable example explain circuit analysis using Kirchhoff's laws.

(12 × 1 = 12 weightage)

Section B

Answer any **two** *questions.*

Each question carries 6 *weightage.*

13. Explain with suitable example the different operators in python.
14. What is Pick ling in Python ? Explain with suitable example.
15. Explain the different steps to solve ordinary second order differential equation with a pair of boundary condition by shooting method.
16. What is simulation ? Explain the different steps involved in Monte Carlo Simulation.

(2 × 6 = 12 weightage)

Turn over

Section C

Answer any **four** *questions.*
Each question carries 3 weightage.

17. Write a program in Python to find factorial of a number.

18. Write a program in Python to check whether the given number is a prime or not.

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. Given $s(x) = \begin{cases} 0 & x \leq 2 \\ (x-2)^3 & 2 > x \end{cases}$. Is $s(x)$ a cubic spline ? justify.

($4 \times 3 = 12$ weightage)