

22U512

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Name:

Reg.No:

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC19U PHY5 B06 / CC20U PHY5 B06 - COMPUTATIONAL PHYSICS

(Physics - Core Course)

(2019 Admission onwards)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

Answer *all* questions. Each question carries 2 marks.

1. How to print multiple things in same line with separation using print command?
2. What are operators in python? Name any three of them.
3. How to add a new item into a python list?
4. What is a python set? How to create them?
5. What is a dictionary data type in python? How to create them?
6. What are python modules?
7. What is the importance of pickling in python?
8. Explain the function subplot().
9. Which are the two methods for solving a scientific problem? Explain.
10. Which is the most common method used for curve fitting? Mention its major features.
11. Explain the use of numerical method in finding the root of an algebraic equation.
12. Explain the effect of step size in the solutions of Euler method.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer *all* questions. Each question carries 5 marks.

13. Explain steps involved in writing and execution of a computer program.
14. What is the use of 'for' statement in python programming? Explain with example.
15. Compute the value of y at x=323.5 by constructing a difference table.

X	321	322.8	324.6	326.4
Y	2.5065	2.5089	2.5108	2.5118

16. Find the first derivative at $x=-3$ using the table given below.

X	-3	-2	-1	0	1	2	3
Y	-30	-15	-5	0	5	15	30

17. Evaluate $\int_2^4 \frac{x^4+2x}{x^2+2x}$ using Trapezoidal rule.

18. Solve the differential equation $\frac{dy}{dx} = x^2 + y^2$ at $x=0.6$ using second order R-K method. Given that $y(0)=1$.

19. What is the need of numerical analysis in computer programming ? Explain with examples ?

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any *one* question. The question carries 10 marks.

20. Explain indexing and slicing of arrays with suitable examples. With the help of a python programme explain how to print an array.

21. With help of Python codes, explain the numerical method of tracking the motion of a projectile by Euler method.

(1 × 10 = 10 Marks)
