0070289 K19U 2269

Reg. No. : .....

Name : .....

V Semester B.Sc. Degree (CBCSS- Reg./Sup./Imp.)

Examination, November-2019

(2014 Admn. Onwards)

Core Course in Physics

5B 09 PHY: PYTHON PROGRAMMING

Time : 3 hrs Max. Marks : 40

SECTION - A

(Very short answer type. Each question carries 1 mark.) (4×1=4)

1. The order of convergence in Newton-Raphson method is ----------

2. First order Runge-Kurtta method is known as ----------

3. Accuracy of numerical integration can be increased by

   a) Choosing smaller intervals

   b) Choosing larger intervals

   c) Choosing optimum intervals

   d) Decreasing the number of trapezoids

4. Newton-Raphson method is useful when

   a) $f^1(x)$ is small

   b) $f^1(x)$ is large

   c) $f^1(x)$ is small and negative

   d) $f^1(x)$ is small an +ve

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SECTION - B

(Short answer type. Each carries **2** marks. Answer **7** questions). **(7×2=14)**

5. What is the disadvantage of numerical method in finding solution to mathematical problems?
6. Give Newton's forward interpolation formula.
7. Give the Tailor series expansion of sin (x) about the point 0.
8. What is meant by curve fitting?
9. What is meant by dynamic data typing?
10. What is meant by slicing?
11. What is meant by indentation? What is its importance in python?
12. Give statements for creating matrices.
13. What is the use of imshow () function?
14. Explain with example the input methods.

SECTION - C

Short Essay/problem type. Each carries **3** marks. Answer **four** questions. **(4×3=12)**

15. Obtain Simpson's one third rule of numerical integration.
16. Find the value of y for x = 340 from the following data:

x	300	350	400	450	500
y	17	18.7	20.2	21.2	22.3

17. Explain the different data structures in python.
18. Write a python program to solve quadratic equation.
19. Write a program for plotting exponential function.
20. Write a note on turtle graphics.

SECTION - D

Long essay type. Answer **two** questions. Each carries **5** marks. **(2×5=10)**

21. Explain the least square method of fitting a straight line and deduce the expressions for the constants a and b.

22. Explain the use of while and for loops in python programming.

23. Create a 4×3 matrix and print the sum of its elements using for loop.

24. Write the Taylor series expansion of Sin x and Cos x about points $\pi/2$ and 0. Develop python programme to evaluate Sin x and Cos x.
