



**K22U 1976**

Reg. No. : .....

Name : .....

**V Semester B.Sc. Degree (CBCSS – Supplementary) Examination,  
November 2022  
(2016 – 18 Admissions)  
CORE COURSE IN PHYSICS  
5B09PHY : Python Programming**

Time : 3 Hours

Max. Marks : 40

**SECTION – A**

(Very short answer type – **Each** carries **1** mark. Answer **all** questions)

1. What is the output of the expression `round(4.576)` ?
2. Which keyword is used to define a function ?
3. The output of the following programme will be `x = 5`.
  - a) `print(x // 2)`
  - b) `print(x % 2)`
4. The output of the following programme will be `text = "python"`  
`print(text[-1])`.

**SECTION – B**

(Short answer type – **Each** carries **2** marks – Answer **7** questions out of **10**)

5. Write the syntax for opening a file in python only for reading. Explain with an example.
6. What is Function Recursion ?
7. How to concatenate two lists in python ?

P.T.O.



8. Write the outputs of the following :
- ```
import numpy as np
a = np.array([1.1, 3.5, 4.5])
b = np.array([1.1, 3.5, 4.5], 'd')
Z = np.array([1, 3, 4], 'D')
p = np.array([[1, 3, 4], [2, 8, 6]])
```
- A) print(a[0]),  
B) print(b[0]),  
C) print(Z[0]),  
D) print(P[1][1])
9. What is the syntax for 'while' loop ?
10. Write a python code using numpy.trapz() for integrating  $\cos(Q)^{**2}$  from 0 to  $2*Pi$  ?
11. What is trapezoidal rule ?
12. Write 'normal equations'.
13. How do you represent a power series in python ? Explain.
14. Write a program to generate a cosine wave and plot it with its coordinates.

### SECTION – C

(Short essay/problem type – **Each** carries **3** marks – Answer **4** questions out of **6**)

15. What is the different type of error in programming ? Explain.
16. What are the different methods for curve fitting in python ?
17. Describe arithmetic operators in python with examples.
18. What is a histogram ? Explain with an example.
19. Write a program to print all prime numbers upto a given number.
20. Given : s="1,2,3,4,5,6", write a python code to find the sum of these numbers.



SECTION – D

(Long essay type – **Each** carries 5 marks – Answer 2 questions out of 4)

21. a) Explain different forms of importing modules in python.  
b) Explain the significance of docstring.  
c) Explain the following string methods.
- |               |           |
|---------------|-----------|
| i) split      | ii) strip |
| iii) swapcase | iv) count |
| v) upper      | vi) lower |
22. Define 'function' in a computer programming language. Explain the use of function with an example.
23. Write the output of the following code :
- a) `x=np.array([1, 8, 3])`  
`y=np.insert(x, 1, 100)`  
`print(y)`
- b) `x=np.array ([1, 8, 3])`  
`y=np.array([11, 18, 13])`  
`z=np.hstack((x,y))`  
`print(z)`
- c) `x=np.array ([1, 8, 3])`  
`y=np.array ([11, 18, 13])`  
`z=np.vstack((x,y))`  
`print(z)`
- d) `x=np.array([1, 8, 3])`  
`y=np.array ([11, 18, 13])`  
`z=np.dstack((x,y))`  
`print(z)`
24. Write a python source code to integrate  $x^2$  from the limit 0 to 1 using Simpson's 1/3 rule without using any inbuilt functions.
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