## 2019

### UG 3rd Semester (General) Examination

# PHYSICS

### Paper - SEC 1P

Full Marks : 15                    Time : 3 Hours

*The figures in the margin indicate full marks.*
*Candidates are required to give their answers*
*in their own words as far as practicable.*

Answer any *one* question.

Experiment : 10

Laboratory Note Book : 2

Niva Voce : 3

**Instruction :**

Write down the necessary formula

Write the computer code in (PYTHON or in c)

Print the input and output

Display your result graphically if asked.

*[ Turn Over ]*

1. Write down the program to print the Fibonacci series.

2. Write down the program to find the roots of a quadratic equation Hence Solve $3x^2 + 5x = 7$

3. Find Numerical solution of equation of motion of simple harmonic oscillator and plot the output for visualization.

4. Write down the program for the motion of a particle in central force field and plot the output for visualization.

5. Write down the program to calculate the mean, variance and standard deviation of 34, 88, 32, 1, 10

6. The distance travelled by a car in km, at intervals of 2 min are given as follows.

| Time (m) | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| Distance (km) | 0.75 | 2.00 | 3.50 | 5.35 | 8.00 |

Write a computer program to evaluate the velocity at T=5 min.

7. Draw the plotting trajectory of a projectiven of mass 5 kg projected making an angk 52° with the horizontally.

8. Write down the computer program to find the product of $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ a nd $\begin{bmatrix} 2 \\ 1 \\ 4 \end{bmatrix}$

9. Write down the computer program to open a file and generate data for plotting using Gnu plot.

10. Write down the computer program to find the cosine series.

$$Cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} p...$$

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