

Acc No.

UG 8906

Total Pages—7

C/18/BSc/3rd Sem/PHSH/C5P



2018

CBCS

3rd Semester

PHYSICS

PAPER—C5P

(Honours)

(Practical)

Full Marks : 20

Time : 2 Hours

*The figures in the right-hand margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

**Mathematical Physics-II Lab.**

- (i) Write the necessary formula.
- (ii) Write the computer code PYTHON only.
- (iii) Print the input and output.

(Turn Over)

- (b) Write a computer program to solve the differential equation for finding the time variation charge during Charging of a capacitor with DC source using Euler and plot it using Matplotlib module. 8
3. (a) Write a computer program to generate an ellipse and plot it using matplotlib module. 7
- (b) Write a computer program to solve the differential equation for finding the current in LC circuit connected with DC source using RK2 method and plot it using Matplotlib module. 8
4. (a) Write a computer program to find the Transpose of the following matrix. 7

$$A = \begin{pmatrix} 2, 5, 12, 8 \\ 3, 6, 9, 13 \\ 8, 6, 4, 10 \end{pmatrix}$$

- (b) The temperature of a well stirred liquid by the isothermal heating coil is given by the equation :

- (b) Write a computer program to find the solution of a damped harmonic oscillator using Euler method, given  $b = 0.1$  and  $\omega_0 = 1$  plot it using matplotlib module. 8

7. (a) Write a program to find the solution of three mesh equations of electrical circuit. 7

$$50 I_1 - 30 I_3 = 80$$

$$40 I_2 - 20 I_3 = 80$$

$$100 I_3 - 20 I_2 - 30 I_1 = 0$$

- (b) Write a computer program to find the solution of a simple harmonic oscillator (no friction) using RK2 method, given  $k = 1$  and plot it using matplotlib module. 8

8. Solve the ODE problem

$$\frac{dT}{dt} = -\frac{1}{27}(T - 65), \quad T(0) = 200^\circ\text{F}$$

11. Laboratory Note Book

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12. Viva-Voce.

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