LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **CHEMISTRY**

SECONDSEMESTER – APRIL 2018

PH 2105 /PH 2103- PHYSICS FOR CHEMISTRY - I

Date: 30-04-2018 Dept. No. Max. : 100 Marks
Time: 01:00-04:00

PART A

Answer **ALL** Questions (10 x 2 = 20)

1. Define displacement and velocity.
2. What is the difference between uniform and non-uniform circular motion?
3. Give the expression for escape speed of earth.
4. Write down the postulates of special theory of relativity.
5. Write a short note on Stoke's formula
6. Define shear modulus.
7. What is meant by polarization?
8. What are the uses of a polaroid?
9. Define a lattice.
10. State Bragg's law.

PART B

Answer any **FOUR** Questions (4 x 7.5 = 30)

11. Construct the Lagrangian for a simple pendulum and obtain its equation of motion.
12. With a neat schematic diagram, explain the measurement of gravitational constant G.
13. Derive Poiseuille's formula for the rate of flow of liquid through a capillary tube.
14. (a) Explain Huygen's theory of double refraction (b) Write a short note on optical activity.
15. With a neat diagram, describe Laue method to determine crystal structure.
16. Obtain an expression for the potential and kinetic energy of a satellite.

PART C

Answer any **FOUR** Questions (4 x 12.5 = 50)

17. Set up the Lagrangian for Atwood's machine and solve its equation of motion.
18. (a) State Kepler's laws.
    (b) Obtain the expressions for the mass of the Sun and density of Earth using the law of Gravitation.
    (c) Write a short note on Parking of orbit.
19. Obtain the relation connecting the three moduli of elasticity.
20. Explain in detail the theory of diffraction grating. Describe how would you use transmission grating for measuring the wavelength of light.
21. (a) Write a short note on (i) unit cell (ii) Bravais lattice (iii) Miller indices
    (b) Explain in detail, the powder diffraction method
22. Explain Quincke's method for determining the surface tension and angle of contact of mercury.