LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FOURTH SEMESTER – **APRIL 2022**

18/17/16UPH4AL01 – PHYSICS FOR CHEMISTRY - II

Date: 27-06-2022 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART – A

Q. No Answer **ALL** questions **(10 x 2 = 20 Marks)**

1 What is a semiconductor?

2 List the properties of ideal op-amp.

3 State Pauli's exclusion principle.

4 Write any two laws of photo-electric emission

5 What are elementary particles?

6 Define nuclear density.

7 What are amorphous solids?

8 Differentiate between elastic deformation and plastic deformation of a solid material.

9 State Heisenberg's uncertainty principle.

10 State Planck's law.

PART – B

Answer any **FOUR** questions **(4 x 7.5 = 30 Marks)**

11 Discuss the different types of extrinsic semiconductors with neat energy band diagrams

12 Give a brief note on continuous and characteristic X-ray spectrum.

13 Explain branching and cross linking of polymers.

14 Explain the liquid drop model of the nucleus.

15 Derive Schrodinger time-dependent wave equation.

16 (a) What is an LED? (2)

b) Describe its working (5.5)

PART – C

Answer any **FOUR** questions **(4 x 12.5 = 50 Marks)**

17 With a neat circuit diagram explain the working of inverting and non-inverting amplifiers using

18 i)Obtain an expression for radius and electron energy of the n^{th} orbit using Bohr's atom model.(6.5)

(ii) Calculate the energy of the electron in the 1^{st} orbit of hydrogen from the following data $e = 1.6 \times 10^{-19}$C, $m = 9.1 \times 10^{-31}$ kg, $h = 6.626 \times 10^{-34}$Js and $\varepsilon_0 = 8.854 \times 10^{-12}$ Fm^{-1}. (6)

19	Draw B.E/A versus A curve and hence write the formula to find the binding energy per nucleon of	
20	Explain any one of the crystal imperfections.	
21	Obtain the time-dependent Schrodinger equation for a particle.	
22	What is a transistor? Explain the working of a transistor in CE mode.	

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