Roll No.												

PRESIDENCY UNIVERSITY
BENGALURU

Department of Research & Development
Mid - Term Examinations - SEPTEMBER 2024

Odd Semester: Ph.D. Course Work	**Date**: 27/09/2024
Course Code: PHY808	**Time**: 10:00am – 11:30am
Course Name: Fundamental of Physics	**Max Marks**: 50
Department: Physics	**Weightage**: 25%

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 5 marks.		**4Qx5M=20M**
1	What is an exciton, and how is it formed in semiconductors?	**5 Marks**
2	Explain the role of fermi level for pure and impure semiconductors with suitable energy level diagram	**5 Marks**
3	What is the dielectric constant and dielectric loss of a material, and how is it defined?	**5 Marks**
4	How do metals, semiconductors, and insulators differ in their electronic properties?	**5 Marks**

Part B

Answer ALL Questions. Each question carries 15 marks.		**2QX15M=30M**
5	How do electronic, ionic, and dipolar polarization differ in terms of their mechanisms and contributions to the overall polarization? Explain with neat diagrams.	**15 Marks**
6	It has been observed that a semiconductor device converts light energy into electrical energy. (a) Identify the semiconductor device. (1 mark) (b) Describe the principle, construction, and operation of the device. (9 marks) (c) Provide an overview of the current-voltage (I-V) characteristics of the device. (5 marks)	**15 Marks**