

MCT
 MANJARA CHARITABLE TRUST
 RAJIV GANDHI INSTITUTE OF TECHNOLOGY, MUMBAI
 Department of Applied Sciences & Humanities
 INTERNAL ASSESMENT (IA) - I

Date: 17/02/2025

Max. Marks: 15
 Name of the Course : Semiconductor Physics (BSC2022)
 FE Sem-II (2024-25)
 Branch: All

Duration: 45 minutes

Instructions:

- From Question 1 (Solve any two)
- From Question 2 (Solve any one)
- From Question 3 (Solve any one)
- Figures to the right of the question indicate full marks.
- Assume the suitable data wherever necessary.
- Illustrate your answers using neat diagrams wherever necessary.

Questions	Maximum Marks	Bloom's Taxonomy Level	Course Outcomes
Q.1 Solve any 2			
a) Explain effect of impurity concentration on Fermi level in N-type semiconductor?	3	1	CO1
b) Find the wavelength of an LED whose energy gap is 3 eV.	3	1	CO2
c) Write applications of photo diode?	3	2	CO3
Q.2 Solve any 1			
a) Calculate the Hall voltage, if a sample of Ge of donor concentration $10^{21}/m^3$, width 4 mm and current density 500 A/m ² subjected to magnetic field of 0.5 Tesla.	4	3	CO1
b) Distinguish between Avalanche break down & Zener break down?	4	2	CO3
Q.3 Solve any 1			
a) What is Hall Effect? Derive the expression for Hall voltage?	5	2	CO1
b) What is PN junction? Derive the expression for barrier potential in PN junction?	5	2	CO2