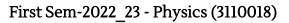


## L.D. College of Engineering, Ahmedabad

# Mid-Semester examination syllabus





#### Module - 1 ELECTRONIC MATERIALS

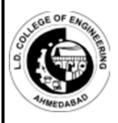
**CO-1** 

- Classical free electron model <u>OR</u> Drude Model Description, Assumptions, Successes, Failures
- ❖ Derivation of Electrical and Thermal Conductivity, Wiedemann Franz Law, Density of States, Kronig Penney Model, E-K Diagram, Direct and Indirect Bandgap semiconductors, Effective mass of an electron (m\*)
- ❖ Numericals based on the all-above-mentioned topics

### **Module - 2 SEMICONDUCTORS**

**CO - 2** 

- Classification of solid state materials based on Energy Band diagram
- Introduction to Semiconducting material
- ❖ Introduction and importance of Fermi energy level in Semiconducting material
- ❖ F-D Distribution function
  - > As a function of temperature
  - $\triangleright$  As a function of energy by taking  $E_f$  as a reference energy level
  - > Numericals based on the above formulations
- Intrinsic Semiconducting material
  - ➤ Exciton
  - ➤ Electron concentration at C.B. (n)
  - ➤ Hole concentration at V.B. (p or h)
  - > Total intrinsic carrier concentration (n<sub>i</sub>)
  - $\triangleright$  Intrinsic conductivity  $(\sigma_i)$
  - ightharpoonup Analysis of ln(R) vs (1/T) graph
  - ightharpoonup Mathematical proof of  $E_f = E_g/2$
  - > Numericals based on the above formulations



# L.D. College of Engineering, Ahmedabad Mid-Semester examination syllabus



First Sem-2022\_23 - Physics (3110018)

Module-3 Measurements CO-4

- Two Probe method
- Assumptions of Four probe method
- Four probe method for Bulk sample
- Four probe method for Thin film
- Van der Pauw method
- Hall effect

Module-4 Superconductivity CO-5

- Introduction to Superconductor
- All properties of Superconductivity

#### **Mid Sem ExamInstructions for students**

- Answers must be in a detailed manner with time consideration.
- Start a new section/Question on a new page.
- Do mention below given data on your supplement without fail
  - o Name
  - o Roll number
  - Division(@ top right corner of your supplement)
  - o Mobile Number (@top center of your supplement)

Subject Co-ordinator (PHYSICS)