

## **Topics Covered in SKU- VLSI Module-2:**

### **Unit - 1**

Mobility of charge carriers, The way mobility changes, Measuring Mobility, Hall Effect, Diffusion, Einstein's relationship, Quasi Fermi level, Continuity Equation.

### **Unit - 2**

Introduction to P-N junction, Poisson Equation for P-N junction, Solution of transport equations, Band Diagram for P-N junction, Calculation of depletion width, charge, electric field and built-in potential.

### **Unit - 3**

Forward bias and reverse bias formula, Diffusion limited regime, ambipolar transport, High Injection, R-G depletion, Breakdown, Trap assisted recombination and generation, Esaki Diode.

### **Unit-4**

AC small signal analysis, Diode characteristics, Calculation of Conductance and series capacitance, Majority carrier junction capacitance, Minority carrier diffusion capacitance, Large signal response, Charge control model, Turn-Off and Turn-On Characteristics.

### **Unit-5**

Concept of Metal Semiconductor Junction, Shotky diode, Band diagram for Shotky diode, Concept of thermionic current.