VLSI Design EE 523 Spring 2025

Shahid Masud

Lecture 5

Topics for lecture 5

- Concept of Resistivity and Sheet Resistance in CMOS process
- Concept of Area Capacitance and square Capacitance in CMOS process
- MOS transistor theory and operation
- Mathematical Equations for:
  - Gate Capacitance, and charge stored
  - Velocity of electron forming current flow
  - W, L ratios in MOS
- Schokley model of MOSFET:
  - Equation for current Ids in three regions of operation

- Quiz 1 will be held on Wednesday (next lecture)

- Readings: Chapter 2 of textbook