University of Baghdad
College of Science
Department of Physics

Subject: Analog Electronics
Second Year
First Semester

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Chapter 1: Introduction to Semiconductors

- Intrinsic Semiconductor.
- Extrinsic Semiconductor (N- and P-Type).

Chapter 2: P-N Junction (Diode)

- Construction
- Biasing (forward and reverse); I-V Curve.
- Applications (half and full wave rectification, clippers, clampers voltage doublers).
- Power Supply.
- Special diodes

Chapter 3: Amplifications and Voltage Amplifiers

- Definition of amplifications and gain
- Basic Characteristics of an ideal voltage amplifiers
- Amplifications elements:

1- Transistor

- Construction.
- Transistor configurations
- Common emitter configurations :characteristic curves;
- Hybrid parameters.
- Load line analysis and Q-point.
- Thermal stability and basic circuits.
- Analysis of divider self-biased circuit voltage
- Small signal common emitter voltage amplifier.
- Properties of other transistor configurations.
- Transistor as a switch

2- Field Effect Transistor (FET)

A- Junction Field Effect Transistor (JFET)

- Construction.
- Circuits
- Common drain circuits : Characteristic Curves
- JFET small signal parameters
- Biasing circuits and bias line analysis
- Voltage amplifier and calculations of gain

B- Metal Oxide Semiconductor Field Effect Transistor (MOSFET)

- Depletion Type (D-MOSFET)
  - Construction.
  - Modes of operations
  - Characteristic Curves
  - Bias Circuits
  - Applications
- Enhancement Type (E-MOSFET)
  - Construction
  - Characteristic Curves
  - Bias Circuits
  - Applications