EE 201: ELECTRONIC DEVICES AND CIRCUITS (3-1-2 : 5)

BIPOLAR JUNCTION TRANSISTOR ANALYSIS AND DESIGN

Analysis of CE Configuration: Current Amplification in the Transistor, Graphical Analysis of Transistor Circuits, Power Calculations, Bypass Capacitor, Coupling Capacitors, Concept of AC and DC Load Lines, Different DC Biasing Methods, Fixed Bias, Emitter Stabilized Bias, Potential Divider Bias, DC Bias with Voltage Feedback, Common Base Configuration Analysis, Emitter follower.

FIELD EFFECT TRANSISTOR CIRCUITS

Bias stability in FET, Different FET Configuration, Analysis of CS, CG and CD Configuration, Voltage Biasing Techniques, Common Source Amplifier, FET Switch MOSFET Invertors.

POWER SEMINCONDUCTOR DEVICES

Basic structures, Characteristics and Applications of SCR, DIAC, TRIAC, UJT, Power MOSFET and IGBT.

SMALL SIGNAL LOW FREQUENCY ANALYSIS AND DESIGN

Hybrid Parameters, CE Configurations, CB Configurations, CS Configurations, CD Configuration, Impedance Reflections, Phase Splitter.

AUDIO FREQUENCY POWER AMPLIFIER

Introduction To Class A, B, AB and C Operation, Class A Common-Emitter Power Amplifier, Transformer Coupled Amplifier, Class B Push-Pull Power Amplifier, Amplifiers Using Complementary Symmetry, Class C Amplifier.

WAVESHAPING CIRCUITS

Linear Wave Shaping Circuits, RC High Pass and Low Pass Circuits, RC Integrator and Differentiator Circuits, Nonlinear Wave Shaping Circuits, Series-Shunt and Two level Diode Clipper Circuits, Clamping Circuits, Clamping Circuits Theorem, Practical Clamping.

SUGGESTED LIST OF LABORATORY EXPERIMENTS:

1. Study of BJT Characteristic.
2. Study of BJT Biasing Methods.
3. Study of FET Characteristics.
4. Study of FET Biasing Methods.
5. Study of UJT/ SCR Characteristics.
6. Study of DIAC/ TRIAC Characteristics.
7. Study of MOSFET Inverter.
8. Study and Implement Common Emitter Amplifier.
9. Study and Implement Common Source Amplifier.
10. Study and Implement RC Low Pass and High Pass Filter Circuits.
11. Study and Implement RC Integrator Circuits.
12. Study and Implement RC Differentiator Circuits.

Text Books:

1. Neamen, Semiconductor Physics & Devices, McGraw-Hill.
2. Boylestad Robert L. and Nashlesky Louis, Electronics Device & Circuits Theory, PHI,

Reference Books:

1. Millman Jacob, Halkias Christos C. and Parikh C., Integrated Electronics, McGraw-HillSchilling Donald L. and Belove E., Electronics Circuits- Discrete and Integrated, McGraw-Hill,
2. Millman J., Taub H. and Mothiki Suryaprakash, Pulse, Digital and Switching Waveforms, McGraw-Hill.
3. Kummar Annand, Pulse and Digital Circuits, PHI.