

EE-303: Analog Electronics

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UNIT-II

JFET: characteristics and equations. Common Source, Common Gate configurations and Source follower. MOSFET: Depletion type MOSFETs and Enhancement type MOSFETs. VMOS and CMOS. Biasing and small signal AC analysis of FETs.

UNIT-II

Darlington pair, Emitter follower, Current mirror, Differential amplifier (Emitter-coupled), calculation of A_{dm} , A_{cm} and CMRR. Amplifier fundamentals, Op-amp basics and its equivalent circuit, Input offset voltage and current, Input bias current, Gain bandwidth product, Slew rate.

UNIT-III

Non-inverting, Buffer, Inverting, Summing, Differentiating, Integrating amplifier, Logarithmic, Anti-logarithmic, Instrumentation amplifier. Schmitt trigger circuit, Precision rectifier, Peak detector, and Active filter.

UNIT-IV

Power Amplifier: Introduction and definition. Series fed class-A amplifier, Transformer coupled class-A amplifier, Class-B, Class-C, and class-D power amplifier. Push-Pull amplifier circuit. Distortion and efficiency of Power Amplifier.

UNIT-V

Feedback concept and types of feedback, Feedback connections. Effect of negative feedback on amplifier's input impedance, output impedance, gain, stability and bandwidth. Barkhausen's criterion for oscillation, Phase-shift oscillator, Wien's bridge oscillator, 555 timer, Voltage controlled oscillator.

TEXT/REFERENCE BOOKS.

1. Robert Boylested, Louis Nashelky, "Electronic Devices and Circuit Theory", Pearson Education, New Delhi, India.
2. Sergio Franco, Design with Operational Amplifier and Analog Integrated Circuits, McGraw Hill Book Company, New Delhi, India.
3. Jacob Millman, Christor C. Halkias, "Electronic Devices and Circuits", McGraw Hill Book Company, New Delhi, India.
4. E. Norman lurch, "Fundamental of Electronics", John Wiley and Sons, New York, USA. Donald L.Schilling, CharlesBelove, "Electronic Circuits: Discrete and Integrated,"
5. McGraw Hill Book Company, New Delhi, India.