Unit I

Chapter 1 : MOSFET DC Circuit Analysis 1-1 to 1-40

Syllabus : Enhancement MOSFET : Construction, Characteristics, DC load line, Parameters, Non-ideal characteristics : Finite output resistance, Body effect, Sub-threshold conduction, Breakdown effects, Temperature effects, Effect of W/L ratio.

Unit I

Chapter 2 : MOSFET AC Circuit Analysis 2-1 to 2-34

Syllabus : Enhancement MOSFET : AC equivalent circuit, Parasitics, Common source amplifier and analysis, Source follower : Circuit diagram, Comparison with common source, Frequency response for amplifier.

Unit II

Chapter 3 : MOSFET Circuits 3-1 to 3-16

Syllabus : MOSFET as switch, CMOS inverter, Resistor and diode, Current sink and source, Current mirror.

Unit II

Chapter 4 : Feedback Amplifiers and Oscillators 4-1 to 4-50

Syllabus : Four types of feedback amplifiers, Effects of feedback, Voltage series and current series feedback amplifiers and analysis, Barkhausen criterion, RC phase shift oscillator, Wien bridge oscillator.

Unit III

Syllabus : Three terminal voltage regulators (317 and 337) : Block diagram of linear voltage regulator, IC 317 and IC 337, Features and specifications, Typical circuits, Current boosting, Low drop out regulator (LDO), SMPS : Block diagram, Types, Features and specifications, Typical circuits, Buck and boost converter.

Unit IV

Syllabus : Block diagram, Differential amplifier analysis for dual input balanced output mode - AC analysis (using r parameters) and DC analysis, Level shifter, Op amp parameters, Current mirror, Op amp characteristics (AC and DC), Voltage series and voltage shunt feedback amplifiers, Effect on R_i, R_o, gain and bandwidth.

Unit V

Chapter 7 : OP-AMP Applications 7-1 to 7-40

Syllabus : Inverting amplifier, Non-inverting amplifier, Voltage follower, Summing amplifier, Difference amplifier, Practical integrator, Practical differentiator, Instrumentation amplifiers.

Unit V

Chapter 8 : Nonlinear Applications of OPAMP 8-1 to 8-32

Syllabus : Comparator, Schmitt trigger, Square and triangular wave generator.

Unit VI

Chapter 9 : Converters using OPAMP 9-1 to 9-32

Syllabus : Voltage to current, Current to voltage converters, DAC and ADC : Resistor weighted and R-2R DAC, SAR, Flash and dual slope ADC types / techniques, Characteristics, Block diagrams, Circuits, Specifications, Merits, Demerits, Comparisons.

Unit VI

Syllabus : PLL : Block diagram, Characteristics, Phase detectors, Details of PLL IC 565, Applications, Typical circuits.

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