

AMEI-11 LINEAR INTEGRATED CIRCUITS

UNIT-1 CIRCUIT CONFIGURATION FOR LINEAR ICs

- 1.1 Current sources,
- 1.2 Analysis of difference amplifiers with active loads,
- 1.3 Supply and temperature independent biasing,
- 1.4 Band gap references, Monolithic IC operational amplifiers, specifications,
- 1.5 Frequency compensation, slew rate and methods of improving slew rate.

UNIT-2 APPLICATIONS OF OPERATIONAL AMPLIFIERS

- 2.1 Linear and Nonlinear Circuits using operational amplifiers and their analysis, Inverting and Non inverting Amplifiers, Differentiator, Integrator, Voltage to current converter,
- 2.2 Instrumentation amplifier, Sine wave Oscillator, Low-pass and band-pass filters, Comparator, Multivibrators and Schmitt trigger, Triangular wave generator,
- 2.3 Precision rectifier, Log and Antilog amplifiers, Non-linear function generator.

UNIT-3 ANALOG MULTIPLIER AND PLL

- 3.1 Analysis of four quadrant (Gilbert cell) and variable transconductance multipliers,
- 3.2 Voltage controlled Oscillator, Closed loop analysis of PLL, AM, PM and FSK modulators and demodulators, Frequency synthesizers, Compander ICs.

UNIT-4 ANALOG TO DIGITAL AND DIGITAL TO ANALOG CONVERTERS

- 4.1 Analog switches,
- 4.2 High speed sample and hold circuits and sample and hold ICs,
- 4.3 Types of D/A converter, Current driven DAC, Switches for DAC, A/D converter-Flash,
- 4.4 Single slope, Dual slope, Successive approximation, Delta Sigma Modulation,
- 4.5 Voltage to Time converters.

UNIT-5 SPECIAL FUNCTION ICs

- 5.1 Astable and Monostable Multivibrators using 555 Timer,
- 5.2 Voltage regulators-linear and switched mode types, Switched capacitor filter,
- 5.3 Frequency to Voltage converters,
- 5.4 Tuned amplifiers, Power amplifiers and Isolation Amplifiers, Video amplifiers,
- 5.5 Fiber optic ICs and Opto-couplers.

References Books:

1. Gray and Meyer, 'Analysis and Design of Analog Integrated Circuits', Wiley International, 1995.
2. J.Michael Jacob, 'Applications and Design with Analog Integrated Circuits', Prentice Hall of India, 1996.
3. Ramakant A.Gayakwad, 'OP-AMP and Linear IC's', Prentice Hall / Pearson Education, 1994.