

## SEMESTER V

### LIC & ITS APPLICATIONS (COMMON FOR ECE, ETCE & MECHAT)

#### **1. CIRCUIT CONFIGURATION FOR LINEAR ICS** **9**

Current sources, Analysis of difference amplifiers with active loads, supply and temperature independent biasing, Band gap references, Monolithic IC operational amplifiers, specifications, frequency compensation, Slew rate and methods of improving slew rate.

#### **2. APPLICATIONS OF OPERATIONAL AMPLIFIERS** **9**

Linear and Nonlinear Circuits using operational amplifiers and their analysis, Inverting and Non inverting Amplifiers, Differentiator, Integrator Voltage to Current converter, Instrumentation amplifier, Sine wave Oscillators, Low pass and band pass filters, comparator, Multivibrator and Schmitt trigger, Triangle wave generator, Precision rectifier, Log and Antilog amplifiers, Non-linear function generator.

#### **3. ANALOG MULTIPLIER AND PLL** **9**

Analysis of four quadrant and variable transconductance multipliers, Voltage controlled Oscillator, Closed loop analysis of PLL, AM, PM and FSK modulators and demodulators. Frequency synthesizers, Compander ICs.

#### **4. ANALOG TO DIGITAL AND DIGITAL TO ANALOG CONVERTORS** **9**

Analog switches, High speed sample and hold circuits and sample and hold IC's, Types of D/A converter Current driven DAC, Switches for DAC, A/D converter, Flash, Single slope, Dual slope, Successive approximation, DM and ADM, Voltage to Time and Voltage to frequency converters.

#### **5. SPECIAL FUNCTION ICS** **9**

Timers, Voltage regulators - linear and switched mode types, Switched capacitor filter, Frequency to Voltage converters, Tuned amplifiers, Power amplifiers and Isolation Amplifiers, Video amplifiers, Fiber optics ICs and opto couplers, Sources of Noises, Op Amp noise analysis and Low noise OP-Amps.

**TOTAL HOURS : 45**

#### **TEXT BOOKS:**

1. Sergio Franco, "Design with operational amplifiers and analog integrated circuits ", McGraw Hill, 1997.
2. D Roy Choudhry, Shail Jain, "Linear Integrated Circuits", New Age International Pvt Ltd., 2000

#### **REFERENCE BOOKS**

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