

## **ANALOG AND DIGITAL ICS AND APPLICATIONS**

### **Unit I: OPERATIONAL AMPLIFIERS**

Op-AMP Dc characteristics :- input bias current input -offset current -input offset voltage-total output offset voltage- thermal drift.

OP-AMP Ac characteristics: - frequency response-stability of op.amp- frequency compensation-slew rate-Inverting and non-inverting amplifiers and its applications:- Adder-Subtractor-Integrator-Differentiator-Current to voltage-Voltage to current converters-current amplifier- instrumentation amp-bridge amp-Voltmeters and current meter-Solving simultaneous equations-Solutions to differential equations for radioactive decay, harmonic oscillator and damped harmonic oscillator.

### **Unit II: COMPARATORS AND APPLICATIONS**

Comparator characteristics and limitations-comparator applications:- zero crossing detector-level detector-window detector-Time marker generator - Phase detector-Schmitt trigger-voltage limiter-Precision half wave -full wave rectifier-peak detector -clipper-clamper-sample and hold circuit - log and antilog amplifier-frequency multiplication and division-A/D and D/A converter.

### **Unit III: FILTER AND WAVE GENERATORS**

Filters: first order low pass filter-second order low pass filter-High pass filter and second order band pass filter - Narrow band wideband pass filter-Band rejection filter-Notch filter and band rejection filters.

Astable - Monostable Multivibrator- Triangular wave generator -Sine wave generator-Phase shift and Weign bridge oscillator.

### **Unit IV: TIMER APPLICATIONS**

IC 555 Application In Monostable mode: Missing pulse detector-Linear ramp generator-Frequency divider-Pulse width Modulation- Frequency Divider-water level fill control-Touch switch.

Adjustable duty cycle- rectangular wave generator-FSK generator-Pulse position modulator-Tone burst generator-Dual timing circuit-Voltage controlled frequency shifter-VOC(IC566) voltage to frequency converter factor.

PLL applications:- Frequency multiplication/division-frequency translation-AM/FM detection - FSK demodulator.

### **Unit V: POWER AMPLIFIERS AND REGULATOR ICS**

Monolithic power amp. IC LM 380-Programmable Transconductance amplifier OTA3080 -. Voltage regulation:- IC 723 voltage regulator- Low /High Voltage regulator-current limit protection-current Fold back- current boosting - Switching regulator -SMPS.

### **TEXT BOOKS**

1. Linear Integrated circuits - D. Roy choudry, Shail jain.
2. Operational amp and Linear IC's -Robert E. Coughlin-PHI Edition.
3. Opamp and linear IC's - Ramakant-A.- Gayakwad PHI Edition.
4. Digital and analog techniques-G.N. Navaneeth, V.M. Gokhulae Kitab Mahal Publishers.

### **REFERENCE BOOK:**

1. Integrated circuits- K.R. Bothkar.