**Subject Code : RCCSIE6**

## CC – VIII – LINEAR ICs AND OPERATIONAL AMPLIFIERS

### Unit – I: IC Fabrication.

Evolution of ICs – SSI, MSI, LSI and VLSl – The Monolithic IC – IC components – Methods of fabricating ICs – Complementary symmetry MOS IC.

### Unit – II: Operational Amplifiers.

General amplifier characteristics – Operational amplifier – ideal operational amplifier – Practical operational amplifier – Comparator – Inverting and non-inverting amplifier – CMRR – Offset error voltages and currents.

### Unit – III: Measurement of Opamp Parameters.

Open loop differential voltage gain – Output resistance – Input offset voltage – Differential input resistance – Input bias current – CMRR – Slew rate – Frequency response of operational amplifiers and compensation techniques.

### Unit – IV: Linear Analog Systems.

Basic Opamp applications – Sign changer – Scale changer – Phase shifter – Summing amplifier – Subtractor – Voltage to current converter – Current to voltage converter – DC voltage follower – Differential DC amplifier – Bridge amplifier – Integrator – differentiator - Opamp Wien Bridge oscillator – Square wave generator – Triangle wave generator – Schmitt trigger.

### Unit – V: IC 741 and 555 Timer:

A general purpose IC Opamp – IC 741 details – Voltage controlled Oscillator (VCO 566) – Opamp voltage regulator – IC 723 introduction

555 Timer – Description of functional diagram – Monostable and astable modes of operation – Schmitt trigger using 555 IC timer.

### Books for Study:


1. Linear ICs – D. Roy Choudhury, Sherif, Jain – Wiley Eastern.
2. Integrated Electronics – Millman and Halkias – Tata McGraw Hill– 1993.
3. Electronics devices and circuits – Allen Mottershead – Prentice Hall India


### Books for Reference :


1. Integrated Circuits - K.R. Botkar – Khanna Publishers.
2. Functional Electronics – K.V. Ramanan – Tata McGraw Hill.
3. Integrated Circuits and Semiconductor Devices – Theory and Applications – Deboo and Burrous - McGraw Hill – 1987.
4. Operational Amplifier and Linear Integrated Circuits, 3rd Edition, Ramakant and Gayakwad, Prentice Hall, India.