
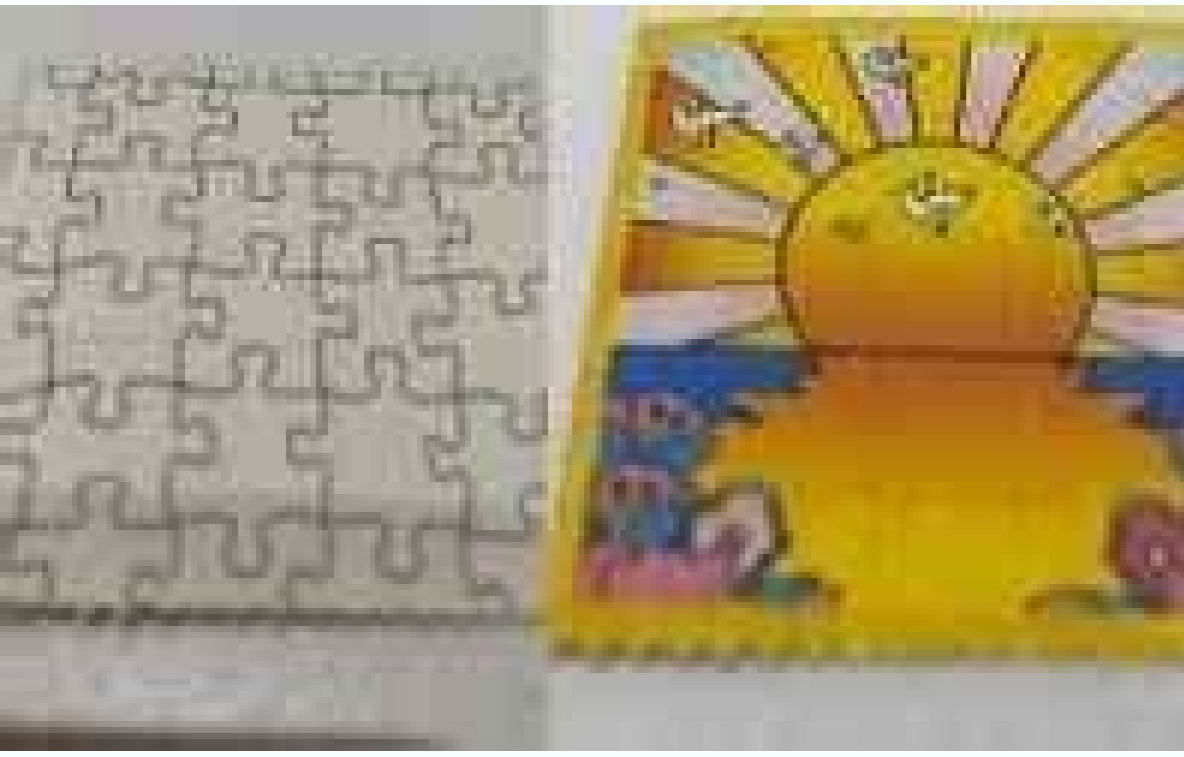


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**Revised Syllabus of B.Sc.-III(Electronics)  
Semester V and semester VI Implemented From June 2015**

SHIVAJI UNIVERSITY, KOLHAPUR  
B.Sc. (Part III) Semester-V  
Electronics(Paper-IX)  
Linear Integrated circuits

**UNIT-1: Linear IC's and Amplifier**

[10]

Transistor dc amplifier, Differential amplifier, Emitter coupled differential amplifier with its operation, characteristics and parameters (IO impedances, common mode and differential mode gain, CMRR) Dual input and single ended output configuration of differential amplifier. Method to improve CMRR (constant current bias and current mirror bias)  
Introduction to op-amp, block diagram of op-amp, offset balancing technique of op-amp, drift parameters of op-amp, study of IC741 and comparative study of IC's LM324, LM308, LF356.

**UNIT-2: Op-amp as Analog System Building Blocks**

[10]

Virtual ground concept, Op-amp as inverting and non-inverting amplifier, summing amplifier (adder and subtractor), V to I and I to V converter, voltage follower, bridge amplifier, Differentiator and integrator, log and antilog amplifier.  
Op-amp as comparator, regenerative comparator (Schmitt trigger), sine wave oscillators (phase shift and Wien-bridge), Triangular wave generator, square and pulse generator, Peak detector, clipping and clamping circuits.

**UNIT-3: Precision Rectifier and Active filters**

[10]

Op-amp as precision AC/DC converter, precision rectifier. Advantage of active filters over passive filters, study of filter response (Butterworth, Chebyshev.) Different types of active filters. Study and design of low pass, high pass, band pass, band stop filters (up to 2<sup>nd</sup> order)

**UNIT-4: Phase Locked -Loops (PLL) and Power Supply**

[10]

Block diagram of PLL with functioning of each block, calculation of capture range and lock range frequencies, application of PLL (frequency multiplier, FM modulator, frequency synthesizer and FSK) Study of IC565, IC8038.  
IC555 timer as variable duty cycle (10% to 90%), sequential timer, ramp generator.

**Reference Books:**

- 1 Integrated Electronics - Millman-Halkias (MGH)
- 2 Op-Amps and Linear circuits - Ramakant Gaikwad (PHI)
- 3 Operational Amplifiers and Linear ICs - Caughlin and Driscoll (PHI)
- 4 Operational Amplifier with Linear Integrated Circuit - W. D. Stanley (CBS Publications)
- 5 Linear Integrated circuit - D Roy Choudhary, Shail Jain, (Wiley Eastern Ltd)
- 6 Micro electronics Circuits - Rashid (PWS publication)
- 7 Integrated circuit (New Edition) - K.R. Botkar
- 8 Linear ICs - Data Book
- 9 Op-Amp - G. B. Clayton, Butterworth Publication
- 10 Design with Operational Amplifiers and Analog ICs - Franco (Mc Graw Hill, 2000)

## GK IN HINDI

ऊर्जा प्रत्यक्ष और परोक्ष रूप से किससे प्राप्त होती है?

**Answer = सूर्य से**

कौन-सी फसल मिट्टी को नाइट्रोजनिय सम्मिश्रणों से उपजाऊ बना सकती है

**Answer = दलहनी फसल**

बॉक्साइट का रासायनिक नाम क्या है?

**Answer = हाइड्रेट एल्युमीनियम ऑक्साइड**

कांच पर लिखने के लिए किस अम्ल का उपयोग किया जाता है ?

**Answer = हाइड्रोजन क्लोराइड अम्ल**

किसी परमाणु के गुण किस पर निर्भर करते है

**Answer = इलेक्ट्रॉनिक संरचना पर**

प्रकृति में मुक्त अवस्था में कौन-सी धातु पायी जाती है

**Answer = चांदी**

जो तत्व ऑक्सिजन पर प्रतिक्रिया नहीं करता है,

**Answer = हीलियम**

शरीर में कार्बोहाइड्रेट का संग्रह किसके रूप में होता है

**Answer = ग्लाइकोजन**

