

B.Sc. (Electronics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2016-2017)

**B.Sc. (ELECTRONICS) – II year
Semester - IV**

**Paper - IV:: Linear Integrated Circuits and basics of Communication
(w.e.f the academic year 2017-18)**

Total number of hours: 48

No. of hours per week: 4

UNIT – I

Operational Amplifiers: Emitter Coupled Differential amplifier, Block diagram of Op. Amp., Characteristics of Op. Amp, .Op. Amp. Parameters - Input resistance, Output resistance, Common mode rejection ratio (CMMR), Slew rate, Offset voltages, Input bias current, Basic Op-Amp circuits - Inverting Op-Amp, Virtual ground, Non-inverting Op-Amp, Frequency response of Op-Amp. Op Amp as: Summing amplifier, subtractor, Comparator, Voltage follower, Integrator, and Differentiator.

UNIT- II

Applications of Op-Amps: Logarithmic amplifier, Sine wave [Wien Bridge] generator and square wave [Astable] generator, Triangular wave generator, Mono stable multivibrator, Solving of simple second order differential equations. Basic Op-Amp series regulator and shunt regulator, IC 555 Timer [Block diagram and its working], IC 555 as mono stable and astable multivibrators.

UNIT – III

Modulation: Need for modulation- Types of modulation- Amplitude, Frequency and Phase modulation.

Amplitude modulation: Analysis of Amplitude modulation, side bands, modulation index, AM modulator, Balanced modulator, Demodulation – diode detector.

UNIT – IV

Frequency modulation: Analysis of FM. Working of simple frequency modulator, detection of FM waves – FM Discriminator. Advantages of frequency modulation.

AM and FM Transmitters and radio receivers [Block diagram approach]. Introduction to PAM, PPM, PWM, and PCM , Delta modulation.

Reference Books:

1. Op amps and linear Integrated Circuits – Ramakant Gayakwad, PHI
2. Linear Integrated Circuits – Coughlin and Driscoll
3. Linear Integrated Circuits- D Roy Choudhury and Shail B Jain
4. Electronic Communication Systems-George Kennedy & Bernard Davis
5. Principles of Electronic Communication Systems-Louis E Freznel, TMH



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Date: 24th Aug., 2016 & 5th June, 2017

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B.Sc. (Electronics Practicals) – II year Semester - IV Paper - IV:: Linear Integrated Circuits and Basics of Communication Lab

Practicals : Using IC 741 OpAmp and IC 555 Timer ::

1. Op amp as inverting Amplifier- Study of frequency response
2. Op amp as non-inverting Amplifier- Study of frequency response.
3. OP Amp as Summing amplifier and comparator(Zero crossing detector)
4. Astable multivibrator – determination of time period and duty cycle.
5. Monostable multivibrator- determination of gate width.
6. Integrator/ Differentiator – study of wave forms.
7. Astable multivibrator using IC 555
8. Monostable multivibrator using IC 555.
9. AM modulator and detector

Simulation of all the above experiments::

1. Inverting and Non inverting amplifiers and comparator
2. Integrator/ Differentiator using op amp
3. Wein's bridge oscillator
4. Astable multivibrator using Op Amp
5. Astable multivibrator using IC 555

Note: Student has to perform minimum of six experiments

- 1) Lab manual for Electronic Devices and Circuits – 4th Edition. By David A Bell – PHI
- 2) Basic Electronics – A Text Lab Manual –Zbar, Malvino, Miller.



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