

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

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**B.Sc. (ELECTRONICS) – II year  
Semester - III  
Paper - III: Analog Circuits  
(w.e. f. the academic year 2017-18)**

**Total number of hours: 48  
No. of hours per week: 4**

## UNIT – I

**Rectifiers and filters:** Rectifiers– half wave, full wave and bridge rectifiers, Efficiency, Ripple factor, regulation, harmonic components in rectified output. **Filters** – choke input (inductor) filter, Shunt capacitor filter, L-section and  $\pi$ -section filters.

## UNIT – II

**Regulated Power Supplies::** Block diagram of regulated power supply, Series and shunt transistor regulated power supplies, three terminal IC regulators (78XX and 79XX), Principle and working of switch mode power supply (SMPS). UPS –Principle and working.

## UNIT – III

**Transistor amplifier:** Classification of amplifiers (Based on type of coupling and frequency range), Hybrid  $\pi$ -model of a transistor, RC-coupled CE amplifier – frequency response, analysis.

**Feedback in amplifiers:** Positive and negative feedback, Effect of negative feedback on gain, bandwidth, noise, input and output impedances. Emitter follower and Darlington pair and its advantages.

## UNIT – IV

**Oscillators::** Barkhausen criterion for sustained oscillations, RC oscillators- RC phase shift and Wien's bridge oscillators, LC oscillators- Hartley and Colpitt, derivation for frequency oscillation.

**Multivibrators::** Astable, Monostable and Bistable multivibrators – Qualitative treatment only.

## Recommended Books:

1. Electronic Devices and Circuits-Millman and Halkias (TMH)
2. Basic Electronics and linear circuits - Bhargava, Kulshreshta & Gupta TMH
3. A first course in Electronics-AA Khan and KK Dey-PHI
4. Electronic Devices and Circuit Theory-Robert L Boylestad & Louis Nashelsky
5. Pulse, Digital and Switching circuits - Milliman and Taub

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Date: 24<sup>th</sup> Aug., 2016 & 5<sup>th</sup> June, 2017

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## B.Sc. (Electronics Practicals) – II year Semester - III Paper - III:: Analog Circuits

1. Study of HWR, FWR and bridge rectifier, determination of ripple factor.
2. Series inductor, shunt capacitor, L-section and  $\pi$ -section filters; determination of ripple factor using Full wave Rectifier.
3. Study of voltage regulator using IC's - 78XX & 79XX.
4. Colpitt's oscillator – determination of frequency.
5. RC Phase shift oscillator - determination of frequency
6. Astable multivibrator – determination of time period and duty cycle.
7. RC-coupled amplifier – frequency response
- 8. Simulation experiments ::**
  - i) Rectifiers
  - ii) RC-coupled amplifier
  - iii) Wein's bridge oscillator
  - iv) Colpitt's oscillator
  - v) RC phase shift oscillator
  - vi) Astable multivibrator

**Note: Student has to perform minimum of six experiments**

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

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