B.Sc. ELECTRONICS SYLLABUS
B.Sc. I YEAR Semester – I
DSC- Paper – I : Circuit Analysis

Total number of hours : 56
No of hours per week : 4
Credits : 4

UNIT - I

AC Fundamentals : The sine wave –average and RMS values – The J Operator – Polar and Rectangular forms of complex numbers – Phasor diagram-Complex impedance and admittance.

Kirchhoff's Current and Voltage Laws: Concept of Voltage and current sources-KVL and KCL- application to simple circuits (AC and DC) consisting of resistors and sources – Node voltage analysis and Mesh analysis.

UNIT-II

Network Theorems (DC and AC): Superposition Theorem ,Thevenin's Theorem, Norton's Theorem, Maximum power transfer Theorem, Reciprocity Theorem, Milliman's Theorem, Application to simple Networks.

UNIT-III

RC and RL Circuits : Transient Response of RL and RC Circuits with step input, Time constants. Frequency response of RC and RL circuits , Types of filters – Low pass filter and High pass filter- frequency response, passive differentiating circuit and passive integrating circuit.

UNIT-IV

Resonance : RLC Series and parallel resonance circuits –Resonant frequency –Q Factor- Bandwidth-Selectivity.

Cathode Ray Oscilloscope: Cathode Ray Tube (CRT) and its working, electron gun focusing, deflection sensitivity, florescent screen. Measurement of Time period, Frequency , Phase and amplitude.

Text Books:

1) Basic Electronics-Grob 10th edition(TMH)
2) Circuit Analysis-P.Gnanaswam pearson Education.
3) Circuit and Networks-A. Sudhakar & S. Pallri(TMH)
4) Pulse, digital & switching waveforms-Milliman &Taub.
5) Networks, Lines and Fields-John Ryder (PHI)
6) Network theory-Smarajit Ghosh(PHI)

Chairperson
BOARDS OF STUDIES
DEPARTMENT OF PHYSICS
KAKATIYA UNIVERSITY
WARANGAL-506 009 (A.P)

B.Sc. I Year, Semester – I : Electronics Practical

Paper – I : Circuit Analysis Lab

No. of hours per week : 3

1. Measurement of peak voltage, frequency using CRO.
2. Measurement of phase using CRO.
3. Thevenin's theorem and Norton's theorem – verification.
4. Maximum power transfer theorem – verification.
5. CR circuit – Frequency response - (Low pass and High pass).
6. CR and LR circuits – Differentiation and integration – tracing of waveforms.
7. LCR – Series resonance circuit – frequency response – Determination of f_o, Q and band width.
8. Simulation: i) verification of KVL and KCL.
   ii) study of network theorems.
   iii) study of frequency response (LR).

Note: Student has to perform minimum of <u>Six</u> experiments.

Reference Books:
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.

▲▲▲