ACHARYA NAGARJUNA UNIVERSITY - UG SYLLABUS
Group: B.Sc Subject: Electronics Year: I Sem: I
Paper Title: CIRCUIT THEORY AND ELECTRONIC DEVICES

UNIT- 1

SINUSOIDAL ALTERNATING WAVEFORMS

Definition of current and voltage. The sine wave, general format of sine wave for voltage or current, phase relations, average value, effective (R.M.S) values. Differences between A.C and D.C. Phase relation of R, L and C

UNIT-II

PASSIVE NETWORKS AND NETWORKS THEOREMS (D.C)

Kirchoff's Laws, Branch current method, Nodal Analysis, Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power, Milliman and Reciprocity theorems.

UNIT-III

RC, RL AND RLC CIRCUITS

Frequency response of RC and RL circuits, their action as low pass and high pass filters. Passive differentiating and integrating circuits. Series resonance and parallel resonance circuits, Q – Factor.

UNIT-IV

BJT, FET and UJT

PN – Junction Diode: Construction, working and V-I characteristics, BJT: Construction, working, and characteristics of CE Configurations. Hybrid parameters and hybrid equivalent circuit of CE Transistor, FET: Construction,

working and characteristics of JFET and MOSFET. Advantages of FET over BJT. UJT: Construction, working and characteristics of UJT. UJT as a Relaxation oscillator.

UNIT-V

POWER SUPPLIES & PHOTO ELECTRIC DEVICES

Rectifiers: Half wave, full wave rectifiers-Efficiency-ripple factor- Filters- L-section&π-section filters. Three terminal fixed voltage I.C. regulators(78XX and &79XX). Light Emitting Diode – Photo diode and LDR.

ELECTRONICS LAB-I

(Circuit Theory and Electronic Devices)

LAB LIST:

1. Thevenin's Theorem-verification
2. Norton's Theorem-verification
3. Maximum Power Transfer Theorem-verification
4. LCR series resonance circuit.
5. PN – Junction Diode: V-I characteristics
5. BJT input and output characteristics
6.FET Output and transfer characteristics
7. UJT VI characteristics
8.LDR characteristics
9. IC regulated power supply(IC-7805)

Lab experiments are to be done on breadboard and simulation software (using multisim) and output values are to be compared and justified for variation.