HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

B. E. COMPUTER ENGINEERING

B. E. FIRST YEAR (EC, IT, CE,)

(Effective From June 2006)

CE 105: ELEMENTS OF ELECTRICAL ENGINEERING AND ELECTRONICS

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./ Viva Marks	Term Work Marks	Total Marks
2	1	3	100	---	25	125

1. **D.C. Circuit:** Effect of temp on resistance, Solution of D.C. circuit including series, parallel and star-delta combination of resistance. Application of Kirchhoff's law (KVL and KCL). Use of Thevenin's, Norton's, Superposition theorem for D.C. circuit.
2. **Work, Power and Energy:** Work, power and energy relationship in electrical, thermal and mechanical system units.
3. **Capacitor:** Types of capacitor, Series, Parallel combination and related circuit calculation with respect to D.C supply. Charging and discharging of capacitor. Energy stored in capacitor.
4. **Electromagnetics:** Magnetic circuit, comparison between electrical and magnetic circuit, series-parallel magnetic circuit calculation, magnetic hysteresis, hysteresis and eddy current losses, magnetic materials, statically and dynamically induced e.m.f, co-efficient of self and mutual inductance, co-efficient of coupling, series-parallel combination of inductance, rise and decay of current in inductive circuit, force experienced by current carrying conductor placed in magnetic field.
5. **A.C. Fundamentals:** Generation of alternating voltage and current, their equations, various types of waveform, definition-R.M.S. average value. Vector representation of alternating quantities, addition and subtraction of vector-complex algebra
6. **A.C. Circuit:** Phasor relationship between voltage and current in each of resistance, inductance and capacitor. A.C. series and parallel circuit power and power factor, method of circuit solution (analytically and vectorially), resonance in series and parallel circuit.
7. **Poly-phase Circuit:** Generation of poly-phase voltage, 3-phase system, phase sequence, inter connection of 3-phases voltage, current and power relationship in balance 3-phase circuit, power measurement in 3-phase and 1-phase circuit.
8. **Electronics:** Impurities in semi-conductor, N-type and P-type semiconductors, P-Njunction and its properties, crystal diode and application in full wave Rectifier circuit, characteristics of zener diode and tunnel diode working and application of special diode like LED, varactor diode, photo diode and photo transistors, CRO and its application for measurement of voltage, frequency and power factor, use of multiplier.

❖ **Term Work:** Term work shall be based on the above syllabus.

REFERENCE BOOKS:

1. Electrical Technology Vol-1By B.L.Theraja
2. Basic Electrical Engineering By V.N.Mittal
3. Electronics made simple By V.K.Mehta