VEER NARMAD SUTH GUJARAT UNIVERSITY,SURAT
ELECTRO TECHNIQUES

SEMESTER -II

TEACHING SCHEME	**L=3; P/D=2; TA=1**
EXAMINATION SCHEME	**Theory = 3hours; marks= 100**
PRACTICAL / DRAWING	**Internal evaluation marks: 20** **External evaluation marks: 30** **Total Marks: 50**

(A) THEORY:

1. Electrostatics:

Coulombs Law, Electric field, Gauss theorem and its application : potential & Potential gradient, point charge and charged spheres, capacitance concentric Spheres, parallel plates, coaxial cylinders and parallel conductors, capacitors, Capacitors in series and parallel, capacitors with composite dielectrics, Electric Field energy.

2. Electromagnetics:

Ampere's Law, Magnetic flux & flux density, Magnetic field strength due to straight conductor and circular coils, Field strength due to solenoid, Magnetomotive force, Magnetic circuit calculations, magnetic leakage,Magnetic hysteresis, Hysteresis and eddy current losses, magnetic field energy Lifting power of a magnet.

Electromagnetic Induction: Faraday's Law and Lenz's law, Dynamically and Statistically induced force, self and mutual inductance.

3 Network Theorems:

Kirchoff's Law – Loop and mode methods of Analysis, Superposition, Thevenin And reciprocity theorems, Star-Delta transformations, Compensation and Norton's Theorems, Maximum power transfer theorem.

4. R-L-C Circuits:

Alternating voltages and currents and their graphical representations, Average and Effective values, form factor phase differences, power and power factor, purely Resistive, inductive and capacity circuits, R-L ,R-C, and R-L-C series circuits, Impedence and admittance, circuits in parallel, series and parallel resonance, Locus diagram for series circuits. Complex algebra and its application to Circuit analysis. Polyphase circuits: Balance two phase and three-phase systems, star and Nesh Connections, calculation of balanced three-phae networks, Polyphase vector Diagram , measurement of power in three phase circuits.

5. Electrical wiring:

Various types of residential wiring circuits as simple parallel circuits, staircase Wiring, godown wiring etc., simple industrial wiring and testing of as per electricity rules.

(B) PRACTICAL / DRAWINGS + TUTORIAL ASSIGNMENTS:

Based on the theory course prescribed above.

(C) REFERENCES:

1. V.N. Mittal, Basic Electrical Engineering, Tata McGraw Hill Publications Ltd.
2. H. Cotton, Advanced Electrical Technology, Pitman Publication.