VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

ELECTRICAL TECHNOLOGY

SEMESTER -III

TEACHING SCHEME	**L=3; P/D=2; TA=0**
EXAMINATION SCHEME	**Theory = 3hours; Marks= 100**
PRACTICAL / DRAWING	**Internal evaluation marks: 20** **External evaluation marks: 30** **Total Marks: 50**

THEORY:

D. C. Machines:

Construction, simple lap and wave windings, emf, torque and power equations, circuit model, characteristics, introduction to armature reaction and commutation, self excited generators, shunt series and compound motors, speed control, efficiency and losses.

Transformers:

Fundamentals and construction of single phase and three phase transformers, ideal transformer, emf equation, no load conditions, loading, accounting for finite permeability and core losses, equivalent circuit, no load and short circuit tests, per unit system, voltage regulation, efficiency, auto-transformer, three phase transformers, star and delta connections.

Synchronous Machines:

Construction and basic principles, three phase windings, rotating magnetic fields, distribution and pitch factors, emf equation, synchronous speed, armature reaction, synchronous reactance, voltage regulation, synchronizing to mains, damper winding, vector diagram for generating and motoring modes, synchronous motor starting, V curves.

Induction Machines:

Construction and simple theory of operation of three phase induction motor, equivalent circuit torque speed characteristics, no load and blocked rotor tests, load test, starting, speed control.

Fractional KW Motors:

Brief description of reluctance motor, hysterisis motor, two phase servo motor, stepper motors.

Practical work shall be based upon the theory course.

REFERENCES:

1. Nagrath I. J. : Basic Electrical Engineering (Tata McGraw-Hill Publication)