

**HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN**

**B.E. SECOND YEAR**

**ELECTRONICS & COMMUNICATION**

(In Force June 2006)

**SEMESTER - III**

**EC304: ELECTRICAL ENGINEERING**

Teaching Scheme		Examination Scheme				
Theory Hrs.	Practical Hrs.	Theory Hrs.	Theory Marks	Pract./ Viva Marks	Term Work Marks	Total Marks
4	2	3	100	25	25	150

**1. D.C. MACHINE:**

Constructional features and types of D.C. Machines, Basic Principles, E.m.f., Torque and speed equations, Performance and Speed characteristics of series, Shunt compound generators and motors, Speed control and application of motors, starters.

**2. TRANSFORMERS:**

Construction and principle of operation, EMF equations, Equivalent circuit and phasor diagram, Testing, Regulation and efficiency, Autotransformer, Current transformer, Potential transformer, Parallel operation, Practical connections.

**3. SYNCHRONOUS MACHINES:**

Constructional features, Principle of operation, EMF equation of alternator, Regulation of alternator, Synchronizing of alternator, Use of synchronous motor for power factor improvement, Starting -procedure.

**4. INDUCTION MOTOR:**

Constructional features and principle of operation, Starting and running condition, Speed torque characteristics, Starting, Speed control and applications, Single phase motors, Principle of operation, Types of motors and their application.

**5. INDIAN ELECTRICITY RULES.**

**6. ELECTRICAL POWER GENERATION:**

Layout and equipment used in thermal, Hydro and nuclear power plants, Magneto hydro dynamic generation, Unconventional energy sources, Load curves and other related factors, Cost of generation, Different types of tariffs, different types of distribution systems, Causes and effects of low power factor, Methods of improving power factor.

**7. SWITCHGEAR & PROTECTION:**

HRC fuse, Circuit breakers-types, Construction and working principle, Relaying scheme, Classification of relays.

**8. Industrial application of Drives:**

Group and individual drive, Braking of motors, speed Control of Electric Drive, speed control of D.C. motors, speed control of induction motors, motors for particular application, applications of 3 phase A.C. commutator motors for special purpose drives, Techo-generator.

❖ Labwork and term work shall be base upon above theory.

**REFERENCE BOOKS:**

1. Electrical Power by S.L.Uppal
2. A Course in Electrical Power by Soni, Gupta and Bhatnagar.
3. Electrical Technology Vol-II by B.L.Theraja.