

SYLLABUS

BE3254 - ELECTRICAL AND INSTRUMENTATION ENGINEERING

UNIT I: TRANSFORMER

9

Introduction - Ideal and Practical Transformer - Phasor diagram - Per Unit System - Equivalent circuit - Testing - Efficiency and Voltage Regulation - Three Phase Transformers - Applications - Auto Transformers, Advantages - Harmonics.

UNIT II: DC MACHINES

9

Introduction - Constructional Features - Motor and Generator mode - EMF and Torque equation - Circuit Model - Methods of Excitation - Characteristics - Starting and Speed Control - Universal Motor - Stepper Motors - Brushless DC Motors - Applications

UNIT III: AC ROTATING MACHINES

9

Principle of operation of three - phase induction motors - Construction - Types - Equivalent circuit, Speed Control - Single phase Induction motors - Construction - Types - starting methods. Alternator: Working principle - Equation of induced EMF - Voltage regulation, Synchronous motors - working principle - starting methods - Torque equation.

UNIT IV: MEASUREMENTS AND INSTRUMENTATION

9

Functional elements of an instrument, Standards and calibration, Operating Principle, types - Moving Coil and Moving Iron meters, Measurement of three phase power, Energy Meter, Instrument Transformers - CT and PT, DSO - Block diagram - Data acquisition.

UNIT V: BASICS OF POWER SYSTEMS

9

Power system structure - Generation, Transmission and distribution, Various voltage levels, Earthing - methods of earthing, protective devices - switch fuse unit - Miniature circuit breaker - moulded case circuit breaker - earth leakage circuit breaker, safety precautions and First Aid

TOTAL: 45 PERIODS

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