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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