# AMME15 BASIC ELECTRICAL ENGINEERING & MEASUREMENTS

**UNIT-1 PHILOSOPHY OF MEASUREMENT & ANALOG MEASUREMENT OF ELECTRICAL QUANTITIES**

1.1 Philosophy Of Measurement: Methods of Measurement, Measurement System, Classification ofinstrument system, Characteristics of instruments & measurement system, Errors in measurement & its analysis, Standards

1.2 Analog Measurement of Electrical Quantities : Electrodynamics ,Thermocouple, Electrostatic & Rectifier type Ammeters & Voltmeters , Electrodynamics Wattmeter, Three Phase Wattmeter, Power in three phase system, errors & remedies in wattmeter and energy meter.

**UNIT-2 INSTRUMENT TRANSFORMER**

2.1 Instrument Transformer and their applications in the extension of instrument range,

2.2 Introduction to measurement of speed, frequency and power factor.

**UNIT-3 MEASUREMENT OF PARAMETERS**

3.1 Different methods of measuring low, medium and high resistances, measurement of inductance & capacitance with the help of AC Bridges, Q Meter.

**UNIT-4 AC POTENTIOMETER & MAGNETIC MEASUREMENT**

4.1 AC Potentiometer: Polar type & Co-ordinate type AC potentiometers , application of AC Potentiometers in electrical measurement

4.2 Magnetic Measurement: Ballistic Galvanometer, flux meter , determination of hysteresis loop, measurement of iron losses.

**UNIT-5 DIGITAL MEASUREMENT OF ELECTRICAL QUANTITIES & CATHODE RAY OSCILLOSCOPE**

5.1 Digital Measurement of Electrical Quantities: Concept of digital measurement, block diagram Study of digital voltmeter, frequency meter Power Analyzer and Harmonics Analyzer; Electronic Multi-meter.

5.2 Cathode Ray Oscilloscope : Basic CRO circuit (Block Diagram),Cathode ray tube (CRT) & its components, application of CRO in measurement ,Lissajous Pattern.; Dual Trace & Dual Beam Oscilloscopes.

**Reference Books:**


1. Forest K. Harries, “Electrical Measurement”, Willey Eastern Pvt. Ltd. India .
2. M.B. Stout ,“Basic Electrical Measurement” Prentice hall of India, India.
3. W.D. Cooper,” Electronic Instrument & Measurement Technique “Prentice Hall International.
4. Rajendra Prashad,“Electrical Engg &Measuring ” Khanna Publisher.