AMEL14 ELECTRICAL MEASUREMENTS-2

UNIT-1 ANALOG INSTRUMENTS

1.1 Analog Instruments, Classification Of Analog Instruments, Principles Of Operation, Operating Forces, Constructional Details, Types Of Supports, Balancing,

1.2 Torque/Weight Ratio, Control Systems, Damping Systems, Comparison Of Methods Of Damping, Methods Of Eddy Current Damping, Permanent Magnets,

1.3 Pointers And Scales, Recording Instruments, Integrating Instrument

UNIT-2 GALVANOMETERS

2.1 D'Arsonval Galvanometer, Torque Equation, Dynamic Behavior Of Galvanometers, Response Of Galvanometers, Operational Constants, Relative Damping,

2.2 Logarithmic Decrement, Overshoot, Non-Dimensional Curves Of A Galvanometer Motion, Damping, Sensitivity, Galvanometer Shunts,

2.3 Ballistic Galvanometer, Vibration Galvanometers

UNIT-3 OPTOELECTRONIC MEASUREMENT

3.1 Monochromatic Light, Polarized Wave Shapes, Refraction And Refractive Index, Reflection, Absorption And Transmittance, Radiometry And Photometry,

3.2 Terms Relating To Photometry, Laws Of Illumination, Terms Relating To Radiometry, Photometric/Radiometric Measurement Systems, Optical Sources, Optical Detectors

UNIT-4 MEASUREMENT OF POWER, ENERGY & INDUSTRIAL METERING

4.1 Power in d.c. Circuits, power in a.c. Circuits, electrodynamometer wattmeters, measurement of power using instrument transformers, three phase wattmeters,

4.2 Measurement of reactive power, general, motor meters, braking, friction, energy meters for a.c. Circuits, theory of induction type meters,

4.3 Polyphase energy meters, industrial metering and tariffs

UNIT-5 ELECTRONIC INSTRUMENTS

5.1 Electronic voltmeters and their advantages, vacuum tube voltmeters (vtvms), differential amplifier, difference amplifier type of electronic voltmeter,

5.2 Source follower type of electronic voltmeter, d.c. Voltmeter with direct coupled amplifier, true rms reading voltmeters, electronic multimeters,

5.3 Current measurements using electronic instruments, measurement of power at audio frequencies, voltmeter based instruments

UNIT-6 CATHODE RAY OSCILLOSCOPE

6.1 Cathode Ray Tube (Crt), Electron Gun, Electrostatic Focusing, Electrostatic Deflection, Effect Of Beam Transit Time And Frequency Limitations, Deflection Plates,

6.2 Screen For Crts, Graticule, Aquadag, Colour Crt Displays, Time Base Generators, Oscilloscope Amplifiers, Vertical Input And Sweep Generator Signal Synchronization,

6.3 Attenuators, Basic Cro Circuit, Accessories Of Cathode Ray Oscilloscopes

UNIT-7 HIGH VOLTAGE AND MAGNETIC MEASUREMENTS, TESTING

7.1 Types Of Tests, Testing Apparatus, Equipment For Voltage Measurement, Localization Of Faults In High Voltage Cables, Testing Of Insulating Materials,

7.2 High Voltage Testing Of Cables, Magnetic Measurements, Ballistic Tests, Permeameters, Alternating Current Magnetic Testing, Method Of Measurement Of Iron Losses

UNIT-8 HIGH FREQUENCY MEASUREMENTS

8.1 Resonance methods, measurement of inductance, measurement of capacitance, measurement of effective resistance, resistance variation method,

8.2 Reactance variation method, t networks, parallel t network, bridge t network, q meter.

Reference Books:

1. Electrical engineering, Publisher Katsons, Writer J B Gupta
2. Electronics And Communication Engineering, Publisher Katsons, Writer J B Gupta