**Lecture Plan**

Hours/week: 3L

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| **Unit No./ Total lec. Req.** | **Topics** | **Lect. Req.** | **Lect. No.** | **Date of Delivery** | **Remark/ Actual lect. Taken** |
| **Unit-1 (8)** | 1.Moving coil, moving iron, | 1 | 1 |  |  |
| 2.Electrodynamic instruments construction | 1 | 2 |  |  |
| 2a Operation, | 1 | 3 |  |  |
| 2b.Torque equation |
| 2c.Errors. |
| 3.Induction instruments-construction | 1 | 4 |  |  |
| 3a.Operation |
| 3b.Torque equation |
| 3c.Error |
| 4.Applications of instruments for measurement of current | 1 | 5 |  |  |
| 4a.Applications of instruments for measurement of voltage |
| 5.Single-phase power and single-phase energy. | 1 | 6 |  |  |
| 6.Errors in wattmeter | 1 | 7 |  |  |
| 6a.Error energy meter |
| 6b.Their compensation and adjustment. |
| 7.Testing of 1-ɸ energy mete by phantom loading. | 1 | 8 |  |  |
| 7a.Calibration of 1-ɸ energy mete by phantom loading |
| **Unit-2 (8)** | 1.Blondel's Theorem for n-phase, p-wire system. | 1 | 9 |  |  |
| 2. Measurement of power and reactive kVA 3-ɸ system |
| 2a.One-wattmeter methods | 1 | 10 |  |  |
| 2b.Two-wattmeter methods |
| 2c.Three-wattmeter methods. |
| 3. 3-phase induction type energy meter. | 1 | 11 |  |  |
| 4.Instrument Transformers | 1 | 12 |  |  |
| 4a.Current Transformers |
| 4b.Construction and operation of current | 1 | 13 |  |  |
| 4c.Potential transformers. | 1 | 14 |  |  |
| 4d.Construction and operation |
| 4e.Ratio and phase angle errors, their minimization. | 1 | 15 |  |  |
| 4f.Effect of variation of power factor |
| 4g.Secondary burden and frequency on errors. |
| 4h.Testing of CTs and PTs. | 1 | 16 |  |  |
| 4i.Applications of CTs and PTs |
| **Unit- 3 (8)** | 1.DC Potentiometers: | 1 | 17 |  |  |
| 1a.Construction |
| 1b.Operation |
| 1c.Standardization with slide wire and Crompton potentiometers | 1 | 18 |  |  |
| 2.Use of potentiometer for measurement | 1 | 19 |  |  |
| 2a.Resistance |
| 2b.Voltmeter | 1 | 20 |  |  |
| 2c.Ammeter calibrations |
| 3.AC potentiometer | 1 | 21 |  |  |
| 3a.Volt ratio boxes. |
| 3b.Construction | 1 | 22 |  |  |
| 3c.Operation |
| 3d.Standardization in-phase | 1 | 23 |  |  |
| 3e.Standardization quadrature potentiometers. | 1 | 24 |  |  |
| 3f.Applications of AC potentiometers. |
| **Unit- 4 (8)** | Measurement of Resistances: | 1 | 25 |  |  |
| Classification of resistance. |
| Measurement of medium resistances ammeter method | 1 | 26 |  |  |
| Measurement of medium resistances voltmeter method |
| Substitution method |
| Wheatstone bridge method | 1 | 27 |  |  |
| Measurement of low resistances | 1 | 28 |  |  |
| Potentiometer method | 1 | 29 |  |  |
| Kelvin's double bridge method | 1 | 30 |  |  |
| Measurement of high resistance: Price's Guard-wire method. | 1 | 31 |  |  |
| Measurement of earth resistance | 1 | 32 |  |  |
| **Unit- 5 (8)** | AC Bridges: | 1 | 33 |  |  |
| Generalized treatment of four-arm AC bridges |
| Sources and detectors. |
| Maxwell's bridge for self-inductance measurement. | 1 | 34 |  |  |
| Hay's bridge for self-inductance measurement. | 1 | 35 |  |  |
| Anderson bridge for self-inductance measurement. | 1 | 36 |  |  |
| Heaviside's bridge for mutual inductance measurement | 1 | 37 |  |  |
| De Sauty Bridge for capacitance measurement. | 1 | 38 |  |  |
| Wien's bridge for capacitance and frequency measurements. | 1 | 39 |  |  |
| Sources of error in bridge measurements and precautions.  Screening of bridge components, Wagner earth device. | 1 | 40 |  |  |
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