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| Discipline  **Mechanical Engg.** | Semester:-  **4th** | Name of the Teaching Faculty:-  **Rakesh Kumar Sahoo** |
| Subject:-  **ELECTRICAL TECHNOLOGY** | No of Days/per Week Class Allotted :-  **4** | Semester From:- **2nd Jan, 2019** To:- **15th Apr, 2019**  No of Weeks:- **15** |
| **Week** | **Class Day** | **Theory/ Practical Topics** |
| 1st | 1st | Introduction to Electrical Power supply system generation, transmission |
| 2nd | Introduction to Electrical Power supply system generation, transmission(Contd…) |
| 3rd | Introduction to Electrical Power supply systemDistribution and Utilization. |
| 4th | AC Supply and DC Supply |
| 2nd | 1st | **2.0 Three phase supply:**  Star and Delta circuit |
| 2nd | Line and Phase relationship |
| 3rd | Line and Phase relationship |
| 4th | Power equation |
| 3rd | 1st | Power equation(Contd..) |
| 2nd | Numerical problems |
| 3rd | **3.0 Measuring Instruments:**  Introduction to construction, operation and use of AC and DC ammeter |
| 4th | Introduction to construction, operation and use of AC and DC voltmeter |
| 4th | 1st | Electrodynamic Watt meter |
| 2nd | Electrodynamic Watt meter (Contd...) |
| 3rd | Energy meter |
| 4th | Energy meter (Contd..) |
| 5th | 1st | Digital multimeter |
| 2nd | Clip on motor |
| 3rd | **4.0 DC Motor:**  Construction and principle of operation |
| 4th | Construction and principle of operation (Contd..) |
| 6th | 1st | Speed and torque characteristics |
| 2nd | Speed and torque characteristics(Contd..) |
| 3rd | Types of DC motor |
| 4th | Specifications and ratings and applications |
| 7th | 1st | Types of insulation used |
| 2nd | Numerical problems |
| 3rd | **5.0 Transformer:**  Construction and principle of operation, |
| 4th | emf equation and transformation ratio |
| 8th | 1st | Load test |
| 2nd | Efficiency and regulation |
| 3rd | Specifications and rating |
| 4th | Auto transformer and 3-phase transformer concept only |
| 9th | 1st | Applications of transformers |
| 2nd | Numerical problems |
| 3rd | **6.0 AC Motor:**  Construction and principles of operation of 3 phase induction motor |
| 4th | Construction and principles of operation of 3 phase induction motor(Contd..) |
| 10th | 1st | Speed torque characteristics |
| 2nd | Slip, speed control (V/f), reversal of rotation |
| 3rd | Starters. Single phase motor |
| 4th | Universal motor, stepper motor & servo motor |
| 11th | 1st | Motor specification & ratings. |
| 2nd | Applications of these motors in various fields |
| 3rd | **7.0 Alternator:**  Construction, |
| 4th | Principles of operation |
| 12th | 1st | Applications |
| 2nd | Self and separate excitation |
| 3rd | **Synchronous Motor:** Construction, principles of operation |
| 4th | Methods of starting |
| 13th | 1st | Applications |
| 2nd | Numerical problems. |
| 3rd | **8.0 Industrial applications:**  Classification of drives |
| 4th | Classification of drives(Contd..) |
| 14th | 1st | factors for selection of motor for different drives |
| 2nd | Enclosures and Mountings |
| 3rd | **9.0 Electric heating and welding:**  Working principles |
| 4th | Working principles(Contd..) |
| 15th | 1st | Types selection of the system, |
| 2nd | Specifications and rating |
| 3rd | **10.0 Electrometallurgical and EletctroAgro systems:**  Concept and principle used in electroplating |
| 4th | Electrical machines in electro-agro systems (Irrigation pumps) |

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| Discipline  **Mechanical Engg.** | Semester: -  **4th** | Name of the Teaching Faculty: -  **Rakesh Kumar Sahoo** |
| Subject: -  **ELECTRICAL LABORATORY PRACTICE** | No of Days/per Week Class Allotted: -  **6** | Semester From: -**2nd Jan, 2019**To: -**15th Apr, 2019**  No of Weeks: -**15** |
| **Week** | **Class Day** | **Theory/ Practical Topics** |
| 1st | 1st | 1.Study of different parts and identification of terminals and testing of insulation resistance of a DC machine. (Theory) |
| 2nd | 1.Study of different parts and identification of terminals and testing of insulation resistance of a DC machine. (Practical) |
| 2nd | 1st | 2.1 Study of 3-pointstarter (Theory) |
| 2nd | 2.1 Study of 3-pointstarter (Practical) |
| 3rd | 1st | 2.2 Study of 4-point starter (Theory) |
| 2nd | 2.2Study of 4-pointstarter (Practical) |
| 4th | 1st | 3.Speed variation of DC motor by field control and armature voltage control method (Theory) |
| 2nd | 3.Speed variation of DC motor by field control and armature voltage control method (Practical) |
| 5th | 1st | 4.Identification of terminals and determination of transformation ratio of a single-phase transformer. (Theory) |
| 2nd | 4.Identification of terminals and determination of transformation ratio of a single-phase transformer. (Practical) |
| 6th | 1st | 5.Determination of regulation of transformer by direct loadings. (Theory) |
| 2nd | 5.Determination of regulation of transformer by direct loadings. (Practical) |
| 7th | 1st | 6.Measurement of earth resistance of an earthing installation. (Theory) |
| 2nd | 6.Measurement of earth resistance of an earthing installation. (Practical) |
| 8th | 1st | 7.1 Study of PMMCtype instrument. (Theory) |
| 2nd | 7.1 Study of PMMCtype instrument. (Practical) |
| 9th | 1st | 7.2 Study ofMI type instrument. (Theory) |
| 2nd | 7.2 Study of MI type instrument. (Practical) |
| 10th | 1st | 8.Start and run of a 3-phase induction rotor by Star-Delta. (Theory) |
| 2nd | 8.Start and run of a 3-phase induction rotor by Star-Delta.(Practical) |
| 11th | 1st | 9.Connect and run an alternator and starter, measure the terminal voltage on different load condition. (Theory) |
| 2nd | 9.Connect and run an alternator and starter, measure the terminal voltage on different load condition. (Practical) |
| 12th | 1st | 9.Connect and run an alternator and starter, measure the terminal voltage on different load condition(Practical)(Contd..) |
| 2nd | 10.Start and run a synchronous motor and measure its speed at no load. (Theory) |
| 13th | 1st | 10.Start and run a synchronous motor and measure its speed at no load. (Practical) |
| 2nd | 10.Start and run a synchronous motor and measure its speed at no load. (Practical)(Contd..) |
| 14th | 1st | Revision of experiment 1,2. |
| 2nd | Revision of experiment 3,4,5. |
| 15th | 1st | Revision of experiment 6,7. |
| 2nd | Revision of experiment 8,9,10. |