|  |
| --- |
| **Lesson Plan** |
| **Faculty** | **Mr. Jaideep Panjeta** |
| **Discipline** | **Electrical Engineering** |
| **Semester** | **6th** |
| **Subject** | **Installation and Maintenance of Electrical Equipment** |
| **Duration** | **15 Weeks (from 20 January 2025 to 2nd May 2025)** |
| **Work Load per Week** | **Lecture – 02 ; Practical - 02** |
|  |  | **Theory** | **PRACTICALS** |
| **Week** | **Lecture Day** | **Topic** | **Name of Practical** |
| **I** | **1** | **Introduction of the Subject:** Installation and Maintenance of Electrical Equipment  | **Introduction of the Lab** |
| **2** | **Tools and Accessories for Installation and Maintenance** 1.1 Tools: Tools, accessories and instruments required for installation, maintenance and repair work.  |
| **II** | **1** | Workmen’s safety devices. Underground cable handling equipment. using fire extinguisher for safety against fire.  | 1. Write IE rules related to safety and demonstrate the steps taken when a person comes in contact with a live wire.  |
| **2** | 1.2 IER rules: Knowledge of Indian Electricity rules, safety codes, causes and prevention of accidents. Meaning of Authorized persons, anti-climbing devices and danger plates, caution notice. |
| **III** | **1** | Clearances rules for crossing of transmission and distribution line to roads, streets, power/telecommunication lines, river and railway line. | 2. Study of tools, accessories and instruments required during installation, maintenance and repair of electrical equipment.   |
| **2** | 1.3 Necessity of Maintenance, Types of maintenance. |
| **IV** | **1** | **Installation and maintenance of transmission and Distribution lines** 2.1 Installation of Line: Method of erection of steel structures and pole support.  | 3. Study the steps required for erection of steel structure along with connection of all accessories viz. jumpers, tee points, insulators, joints etc. during installation of a transmission line. |
| **2** | Connection of jumpers, tee-off points, joints and dead ends. Earthing of transmission lines and guarding.  |
| **V** | **1** | Arrangement for different types of insulators. Installation and use of Bird guards, earth wire and guy wires. | 4. Measure insulation resistance of Three-phase PVC cable in a distribution board.   |
| **2** | Laying of service lines, provision of service fuses, installation of energy meters. |
| **VI** | **1** | 2.2 Maintenance of Line: Patrolling and visual inspection of lines, special inspections and night inspections. | 5. Study of steps required for erection of distribution line along with connection of all accessories viz. jumpers, tee points, insulators, joints etc. during installation of a distribution line. |
| **2** | Permit to work, arranging of shut downs personally, temporary earthing, cancellation of permit and restoration of supply. |
| **VII** | **1** | Maintenance schedule of busbars, isolating switches, Relays, circuit breakers, LT switches.  | 6. Study of tests done at the time of commissioning of transmission and distribution line as per IS standards.  |
| **2** | **Installation and Maintenance of Underground Cables** 3.1 Installation of Cable: Inspection, storage, transportation and handling of cables.  |
| **VIII** | **1** | Clearances from other department such as Municipal, Highway authorities, railway, etc.  | 7. Prepare list of all electrical accessories required for installation of Pole mounted substation, Plinth mounted substation. |
| **2** | Different methods of laying cable. Introduction to Cable filling compounds, Epoxy resin and hardeners.  |
| **IX** | **1** | 3.2 Maintenance of Cable: Cable jointing and termination. | 8. Study of various pre-installation tests as per IS standard done on following electrical equipment viz Electrical motors, Electrical Generators, Transformers and Underground cables.  |
| **2** | Assignment |
| **X** | **1** | Test  | 9. Study of various pre-commissioning tests as per IS standard done on following electrical equipment viz Electrical motors, Electrical Generators, Transformers and Underground cables. |
| **2** | **Installation and Maintenance of Electrical Machine** 4.1 Installation of Machine: Inspection and handling of transformers and motors.  |
| **XI** | **1** | Installation of power and distribution transformers. Installation of CT and PT. Dehydration of Transformer.  | 10. Prepare maintenance schedule of Power transformer.  |
| **2** | 4.2 Maintenance of Machine: Preventive Maintenance schedule of transformer below and above 1000KVA. |
| **XII** | **1** | Maintenance schedule of CT and PT. Preventive Maintenance schedule of motors, over hauling of motors, trouble shooting of electric motors.  | 11. Prepare maintenance schedule of Distribution Transformer.  |
| **2** | **Testing and Commissioning of Electrical Equipment** 5.1 Testing of insulator.  |
| **XIII** | **1** | 5.2 Testing of transmission and distribution line before commissioning.  | 12. Prepare maintenance schedule of Motors. |
| **2** | 5.3 Testing of electrical motor.  |
| **XIV** | **1** | 5.4 Testing of transformers. | **File checking and Viva voce** |
| **2** | Test  |
| **XV** | **1** | **Assignments**  | **File checking and Viva voce** |
| **2** | **Revison** |