**Govt. Polytechnic Chhapar**

**Lesson Plan**

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| **Name of Faculty** | | | **Mrs. Mukesh** |
| **Discipline** | | | **Electrical Engineering** |
| **Semester** | | | **4th (even- semester)** |
| **Subject** | | | **Installation and maintenance of electrical equipment** |
| **Lesson Plan Duration** | | | **From March 2022 to June 2022** |
| **Work load (Theory ) Per Week** | | | **(04)** |
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| **Week** | **Day** | **Topics** | |
| 1st | 1 | **Unit 1 : Tools, Accessories** and instruments required for installation maintenance | |
| 2 | accessories and repair work Knowledge of Indian Electricity rules, safety codes, | |
| 3 | causes prevention of accidents, artificial respiration of an electrocuted person | |
| 4 | workmen's safety devices | |
| 2nd | 1 | Class test and revision | |
| 2 | **Unit 2 : Installation**, 2.1 Installation of transmission and Distribution Lines: | |
| 3 | Erection of steel structures, connecting jumpers, tee-off points, joints and dead ends | |
| 4 | crossing of roads, streets, power/telecommunication lines and | |
| 3rd | 1 | railway line crossings clearances; earthing of transmission lines and guarding, | |
| 2 | spacing and configuration of conductors: | |
| 3 | Arrangement for suspension and strain insulators, bird guards, anti-climbing devices and  danger plates; | |
| 4 | Sizes of conductor, earth wire and guy wires. | |
| 4th | 1 | Laying of service lines, earthing, provision of service fuses, | |
| 2 | installation of energy meters | |
| 3 | **2.2 Laying of Underground Cables**: | |
| 4 | Inspection, storage, transportation and handling of cables | |
| 5th | 1 | cable handling equipment, cable laying depths and clearances from other services | |
| 2 | such as: water, sewerage, gas, heating and other mains, | |
| 3 | and also a series of power and telecommunication cables and coordination with these  services | |
| 4 | excavation of trenches, direct cable laying, including laying of cable from the drum, | |
| 6th | 1 | laying cable in the trench, taking all measurements and making drawings, | |
| 2 | back filling of trenches with earth or sand, Laying protective layer of bricks etc. | |
| 3 | Laying of cables into pipes and conduits and within buildings. | |
| 4 | Class test/ revision | |
| 7th | 1 | Problem solution | |
| 2 | *2.3 Elementary idea regarding*, inspection and handling of transformers; | |
| 3 | pole mounted substations, plinth mounted substations, grid substation, bus bars | |
| 4 | isolators, voltage and current transformers, lightning arrestors, | |
| 8th | 1 | control and relay panels, HT/LT circuit breakers, LT switches, installation of | |
| 2 | Power/distribution transformers, dehydration. Earthing system | |
| 3 | fencing of yard, equipment foundations and trenches etc. | |
| 4 | *2.4 Testing of various electrical equipment* such as electrical motor, | |
| 9th | 1 | transformers, cables, and generators, motor control centres, medium | |
| 2 | voltage distribution panels, power control centres, motor control centres, | |
| 3 | lighting arrangement, storage, pre-installation checks, connecting and | |
| 4 | starting, pre-commissioning checks, drying out | |
| 10th | 1 | Class test/ revision | |
| 2 | Problem solution | |
| 3 | **3 Maintenance** | |
| 4 | *3.1 Types of maintenance*, maintenance schedules, procedures | |

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| 11th | 1 | *3.2 Maintenance of Transmission and Distribution System* |
| 2 | Authorized persons, danger notice, caution notice, permit to work, |
| 3 | arranging of shutdowns personally, temporary earthing, |
| 4 | cancellation of permit and restoration of supply |
| 12th | 1 | Patrolling and visual inspection of lines - points to be noted during patrolling from  ground; |
| 2 | special inspections and night inspections; Location of faults using Meggar, effect of open  or loose neutral connections, |
| 3 | provision of proper fuses on service lines and their effect on system, causes of dim and flickering  lights |
| 4 | *3.3 Maintenance of Distribution Transformers* |
| 13th | 1 | Transformer maintenance and points to be attended to in respect of various items of  equipment |
| 2 | Checking of insulation resistance, transformer oil level and BDV test of oil, measurement  of earth resistance |
| 3 | *3.4 Maintenance of Grid Substations,* Checking and maintenance of busbars, |
| 4 | Isolating switches, HT/LT circuit breakers, LT switches. Power transformers |
| 14th | 1 | *3.5 Maintenance of Motors* , Over hauling of motors, preventive maintenance, trouble  shooting of electric motors |
| 2 | *3.6 Domestic Installation: Introduction* |
| 3 | testing of electrical installation of a building, testing of insulation resistance to earth, |
| 4 | testing of insulation and resistance between conductors, |
| 15th | 1 | continuity or open circuit test |
| 2 | Class test/ revision |
| 3 | Viva-voice related to subject |
| 4 | Revision/Review/Test of old HSBTE Papers |