# LESSON PLAN OF ELECTRICAL INSTALLATION & ESTIMATING

| Discipline:- Electrical | Semester:- 6th | Name Of The Teaching Faculty:- MANMOHAN PANDA |
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| Subject:- Electrical Installation & Estimating | No Of Days Per week Class Allotted:-5 | No Of Weeks:-12 |
| No. of week | No. of class | Topic to be taught |
| 1st | 1 | **INDIAN ELECTRICITY RULES** Definitions, Ampere, Apparatus, Accessible, Bare, cable, circuit, circuit breaker, conductor voltage (low, medium, high, EH), live, dead, cut-out, conduit, system, danger, Installation, earthing system, span, volt, switch gear, etc |
| | 2 | General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45,46 |
| | 3 | General conditions relating to supply and use of energy : rule 47, 48, 49, 50, 51,54, 55, 56, 57, 58, 59, 60 |
| | 4 | General conditions relating to supply and use of energy : Rule 61, 62, 63, 64, 65, 66, 67, 68, 70 |
| | 5 | OH lines :Rule 74, 75, 76, 77, 78, 79, 80 |
| 2nd | 6 | OH lines : Rule 86, 87, 88, 89, 90, 91 |
| | 7 | **ELECTRICAL INSTALLATIONS** Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy |
| | 8 | Methods of wiring, systems of wiring Wire and cable |
| | 9 | Conductor materials used in cables, insulating materials mechanical protection |
| | 10 | Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables |
| 3rd | 11 | **ACCESSORIES**: Main switch and distribution boards, conduits, conduit accessories and fittings, lighting accessories and fittings, fuses |
| | 12 | Important definitions, determination of size of fuse – wire, fuse units |
| | 13 | Earthing conductor, earthing, IS specifications |

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| | | regarding earthing of electrical installations, points to be earthed |
| | 14 | Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing |
| | 15 | LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes, design of lighting schemes, factory lighting, public lighting installations |
| 4th | 16 | Street lighting, general rules for wiring |
| | 17 | Determination of number of points (light, fan, socket, outlets) |
| | 18 | Determination of total load, determination of Number of sub-<br>Circuits |
| | 19 | **INTERNAL WIRING:** Type of internal wiring, cleat wiring, CTS wiring, wooden casing capping, metal sheathed wiring, conduit wiring |
| | 20 | Advantage and disadvantages comparison and applications |
| 5th | 21 | Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 $m^2$ with given light, fan & plug points |
| | 22 | Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 $m^2$ with given light, fan & plug points |
| | 23 | Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 $m^2$ with given light, fan & plug points |
| | 24 | Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and one verandah within 25 $m^2$ with given light, fan & plug points |
| | 25 | Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and |

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| | | one verandah within 25 m² with given light, fan & plug points |
| 6th | 26 | Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m² with given light, fan & plug points |
| | 27 | Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m² with given light, fan & plug points |
| | 28 | Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m² with given light, fan & plug points |
| | 29 | Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m² and load within 10 KW |
| | 30 | Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m² and load within 10 KW |
| 7th | 31 | **OVER HEAD INSTALLATION:** Main components of overhead lines, line supports |
| | 32 | Factors Governing Height of pole, conductor materials, determination of size of conductor for overhead transmission line, cross arms, pole brackets and clamps |
| | 33 | Guys and stays, conductors configurations, spacing and clearances |
| | 34 | Span lengths, overhead line insulators, types of insulators, lighting arresters, danger plates |
| | 35 | Anti-climbing devices, bird guards, beads of jumpers, jumpers, tee-offs, guarding of overhead lines |
| 8th | 36 | Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR |

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| | 37 | Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR |
| | 38 | Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR |
| | 39 | Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR |
| | 40 | Prepare an estimate of materials required for HT distribution line (11 KV) within 2 km and load of 2000 KVA maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consider action using ACSR |
| 9th | 41 | Prepare an estimate of materials required for HT distribution line (11 KV) within 2 km and load of 2000 KVA maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consider action using ACSR |
| | 42 | Prepare an estimate of materials required for HT distribution line (11 KV) within 2 km and load of 2000 KVA maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation of the size of conductor (from conductor chart), |

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| | | current carrying capacity and voltage regulation consider action using ACSR |
| | 43 | **OVER HEAD SERVICE LINE:** Components of service lines, service line (cables and conductors), bearer wire, lacing rod. Ariel fuse, service support, energy box and meters |
| | 44 | Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building |
| | 45 | Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building |
| 10th | 46 | Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter |
| | 47 | Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter |
| | 48 | Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter |
| | 49 | Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire. |
| | 50 | Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire. |
| 11th | 51 | Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire. |
| | 52 | Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using bare conductor and insulated wire combined |
| | 53 | **Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using bare conductor and insulated wire combined** |
| | 54 | |

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| | 54 | Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using bare conductor and insulated wire combined |
| | 55 | **ESTIMATING FOR DISTRIBUTION SUBSTATIONS**: Prepare one materials estimate for Pole mounted substation |
| 12th | 56 | Prepare one materials estimate for Pole mounted substation |
| | 57 | Prepare one materials estimate for Pole mounted substation |
| | 58 | Prepare one materials estimate for Plinth Mounted substation |
| | 59 | Prepare one materials estimate for Plinth Mounted substation |
| | 60 | Prepare one materials estimate for Plinth Mounted substation |

**PREPARED BY**

**MANMOHAN PANDA**

**LECT. IN DEPT EE**

M.M. Panda 14/02/2023