

Lesson Plan of Electrical Department of SAI Institute of Technological Science

Discipline Electrical Engg.	Semester:-6th	Name of the Teaching Faculty:- Er.A.MOHANTY
Subject: Electrical Installation And Estimating	No of Days/per Week Class Allotted :- 4+ 1(Tutorial)	Semester From:- 16/01/2024 To:- 26/04/2024 No of Weeks:- 15
Week	Class Day	Theory/Practical Topics
1 st	1 st	1. INDIAN ELECTRICITY RULES Definitions, Ampere, Apparatus, Accessible, Bare, cable, circuit, circuit breaker, conductor voltage (low, medium, high, EH)
	2 nd	live, dead, cut-out, conduit, system, danger, Installation, earthing system, span, volt, switch gear, etc.
	3 rd	1.2 General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.
	4 th	1.3 General conditions relating to supply and use of energy: rule 47, 48, 49, 50, 51, 54, 55,
	5 th	1.3 General conditions relating to supply and use of energy: rule 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 70. Tutorial
2 nd	1 st	1.4 OH lines: Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91
	2 nd	2. ELECTRICAL INSTALLATIONS Electrical installations, domestic, industrial, Wiring System, Internal distribution of Electrical Energy. Methods of wiring, systems of wiring, wire and cable, conductor materials used in cables, insulating materials mechanical protection.
	3 rd	Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables.
	4 th	Tutorial
	5 th	2. 2 ACCESSORIES: Main switch and distribution boards, conduits, conduit accessories and fittings, lighting accessories and fittings, fuses, important definitions, determination of size of fuse – wire, fuse units. Earthing conductor, earthing IS specifications regarding earthing of electrical installations, points to be earthed
3 rd	1 st	Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing.
	2 nd	2.3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes, design of lighting schemes, factory lighting, public lighting installations, street lighting, general rules for wiring
	3 rd	determination of number of points (light, fan, socket, outlets), determination of total load, determination of Number of sub-circuits
	4 th	3. INTERNAL WIRING 3.1 Type of internal wiring, cleat wiring, CTS wiring, wood encasing capping,
	5 th	metals sheathed wiring, conduit wiring, their advantage and disadvantages comparison and applications. Tutorial
4 th	1 st	3. 2 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.
	2 nd	3.3 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.
	3 rd	3. 4 Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80 m ² with given light, fan & plug points
	4 th	3.5 Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30 m ² and load within 10 KW.
	5 th	3. 5 Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30 m ² and load within 10 KW. (Contd...) Tutorial
5 th	1 st	3. 5 Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30 m ² and load within 10 KW.
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	5 th	3.5 Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m ² and load within 10 KW. Tutorial
6th	1 st	5. OVERHEAD SERVICE LINES Components of service lines, service line (cables and conductors), bearer wire, lacing rod. Ariel fuse, service support, energy box and meters etc.
	2 nd	Components of service lines, service line (cables and conductors), bearer wire, lacing rod. Ariel fuse, service support, energy box and meters etc
	3 rd	5.2 Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building.
	4 th	5.2 Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building.
	5 th	5.3 Prepare and estimate for providing single phase supply load of 3 KW to each floor of a double stored building having separate energy meter. (Contd...) Tutorial
7th	1 st	5.3 Prepare and estimate for providing single phase supply load of 3 KW to each floor of a double stored building having separate energy meter.
	2 nd	5.3 Prepare and estimate for providing single phase supply load of 3 KW to each floor of a double stored building having separate energy meter.
	3 rd	5.4 Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.
	4 th	5.4 Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.
	5 th	5.4 Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire. (Contd...) Tutorial
8th	1 st	5.4 Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.
	2 nd	5.5 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.
	3 rd	5.5 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.
	4 th	5.5 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.
	5 th	5.5 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. Tutorial
9th	1 st	4. OVERHEAD INSTALLATION Main components of overhead lines, line supports, factors Governing Height of pole, conductor materials, determination of size of conductor for overhead
	2 nd	transmission line, cross arms, pole brackets and clamps, guys and stays, conductors configurations, spacing and clearances, span lengths,
	3 rd	overhead line insulators, types of insulators, lighting arresters, danger plates, anti-climbing devices, bird guards, beads of jumpers, jumpers, tee-offs, guarding of overhead lines.
	4 th	4.2 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.
	5 th	4.2 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. Tutorial
10th	1 st	4.2 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.
	2 nd	4.2 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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	4 th	4.3. 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.
	5 th	4.4 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 consideration using ACSR. Tutorial
12th	1 st	4.4 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 consideration using ACSR.
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13th	1 st	4.4 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 consideration using ACSR.
	2 nd	6. ESTIMATING FOR DISTRIBUTION SUBSTATIONS Prepare one material estimate for following types of transformer substations. Pole mounted substation
	3 rd	Pole mounted substation
	4 th	Pole mounted substation
	5 th	Pole mounted substation Tutorial
14th	1 st	Pole mounted substation
	2 nd	Pole mounted substation
	3 rd	6.1.2 Plinth Mounted substation.

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14th	4 th	6.1.2 Plinth Mounted substation.
	5 th	6.1.2 Plinth Mounted substation. Tutorial
15th	1 st	6.1.2 Plinth Mounted substation.
	2 nd	6.1.2 Plinth Mounted substation.
	3 rd	Previous year question paper discussion
	4 th	Previous year question paper discussion
	5 th	Previous year question paper discussion Tutorial