

Discipline: Electrical Engg.	Semester: 6th Sem	Name of the Teaching Faculty: Er. Utkal Keshari Rout
Subject: TH 1 ELECTRICAL INSTALLATION AND ESTIMATING	No of Days/ Per week class allotted: 5 Classes P/W (75)	Semester From Date: 13/02/2023 To Date: 23/05/2023 No. Of Weeks: 15
WEEK	CLASS DAY	THEORY/PRACTICAL TOPICS
1st	1st	1. INDIAN ELECTRICITY RULES 1.1 Definitions, Ampere, Apparatus, Accessible, Bare, cable, circuit, circuit breaker, conductor voltage (low, medium, high, EH).
	2nd	live, dead, cut-out, conduit, system, danger, Installation, earthing system, span, volt, switch gear, etc
	3rd	1.2 General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.
	4th	1.3 General conditions relating to supply and use of energy : rule 47, 48, 49, 50, 51, 54, 55, 56, 57, 58.
	5th	Doubt clear class
2nd	1st	59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 70.
	2nd	1.4 OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91
	3rd	2.ELECTRICAL INSTALLATIONS 2. 1 Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy.
	4th	Methods of wiring, systems of wiring, wire and cable, conductor materials used in cables
	5th	Doubt clear class
3rd	1st	insulating materials mechanical protection. Types of cables used in internal wiring
	2nd	multi-stranded cables, voltage grading of cables, general specifications of cables.
	3rd	2. 2 ACCESSORIES: Main switch and distribution boards, conduits, conduit accessories and fittings
	4th	lighting accessories and fittings, fuses, important definitions, determination of size of fuse – wire, fuse units.
	5th	Doubt clear class
4th	1st	Earthing conductor, earthing, IS specifications regarding earthing of electrical installations, points to be earthed
	2nd	Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing.
	3rd	2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes,
	4th	design of lighting schemes, factory lighting, public lighting installations

	5 th	Revision class
5 th	1 st	street lighting, general rules for wiring, determination of number of points (light, fan, socket, outlets),
	2 nd	determination of total load, determination of Number of sub-circuits.
	3 rd	3. INTERNAL WIRING 3 . 1 Type of internal wiring, cleat wiring, CTS wiring, wooden casing capping,
	4 th	metal sheathed wiring, conduit wiring, their advantage and disadvantages comparison and applications.
	5 th	Doubt clear class
6 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	----- do ----
	3 rd	3 . 3 Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and one verandha within 25 m ² with given light, fan & plug points.
	4 th	---- do ----
	5 th	Revision class
7 th	1 st	3 . 4 Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m ² with given light, fan & plug points.
	2 nd	---- do ----
	3 rd	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.
	4 th	---- do ----
	5 th	Revision class
8 th	1 st	Doubt clear class on previous class.
	2 nd	Class Test / IA
	3 rd	4. OVER HEAD INSTALLATION 4.1. Main components of overhead lines, line supports, factors Governing Height of pole, conductor materials, determination of size of conductor for overhead transmission line
	4 th	cross arms, pole brackets and clamps, guys and stays, conductors configurations, spacing and clearances, span lengths, overhead line insulators

	5 th	Doubt clear class on previous class.
9 th	1 st	types of insulators, lighting arresters, danger plates, anti-climbing devices, bird guards, beads of jumpers, jumpers, tee-offs, guarding of overhead lines.
	2 nd	Doubt clear class on previous three classes / if remaining
	3 rd	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)
	4 th	current carrying capacity and voltage regulation consideration using ACSR.
	5 th	Revision class
10 th	1 st	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),
	2 nd	current carrying capacity and voltage regulation consideration using ACSR.
	3 rd	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)
	4 th	current carrying capacity and voltage regulation of the size of conductor (from conductor chart),
	5 th	Revision class
11 th	1 st	current carrying capacity and voltage regulation consider action using ACSR.
	2 nd	Doubt clear class
	3 rd	5. OVER HEAD SERVICE LINES 5. 1 Components of service lines, service line (cables and conductors), bearer wire
	4 th	lacing rod. Ariel fuse, service support, energy box and meters etc.
	5 th	Doubt clear class
12 th	1 st	5. 2 Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building.
	2 nd	---- do ----
	3 rd	5. 3 Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter.
	4 th	---- do ----

	5 th	Revision class
13 th	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	---- do ----
	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	---- do ----
	5 th	Doubt clear class on previous class.
14 th	1 st	Doubt clear class
	2 nd	Class Test
	3 rd	6.ESTIMATING FOR DISTRIBUTION SUBSTATIONS 6. 1 Prepare one materials estimate for following types of transformer substations.
	4 th	6.1.1 Pole mounted substation.
	5 th	Doubt clear class
15 th	1 st	---- do ----
	2 nd	6.1.2 Plinth Mounted substation.
	3 rd	---- do ----
	4 th	Doubt clear class
	5 th	Class Test