

Discipline: Electrical Engineering	Semester: 6th Semester 2021-Summer	Name of the Teaching Faculty: Shri Deepak Patra, Lect. Electrical Engg
Subject: Utilization of Electrical Installation and Estimating(EIE)	No. of Days/week Class Allotted:60	Semester from date: 05/04/2021 to date: 30 /06/2021 No of weeks: 13
Week	Class Day	Theory Topics
1st	1st	Introduction to the Subject
	2nd	INDIAN ELECTRICITY RULES
	3rd	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.
	4th	General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.
2nd	1st	
	2nd	General conditions relating to supply and use of energy : rule
	3rd	47, 48, 49, 50, 51, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 70.
	4th	OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91
3rd	1st	
	2nd	ELECTRICAL INSTALLATIONS Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy
	3rd	Methods of wiring, systems of wiring, wire and cable, conductor materials used in cables, insulating materials mechanical protection.
	4th	Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables.
4th	1st	ACCESSORIES: Main switch and distribution boards, conduits, conduit accessories and fittings,
	2nd	lighting accessories and fittings, fuses, important definitions, determination of size of fuse – wire, fuse units.
	3rd	Earthing conductor, earthing, IS specifications regarding earthing of electrical installations, points to be earthed.
	4th	Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing.
5th	1st	LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes, design of lighting schemes, factory lighting, public lighting installations,
	2nd	Street lighting, general rules for wiring, determination of number of points (light, fan, socket, outlets),
	3rd	Determination of total load, determination of Number of sub-circuits.
	4th	INTERNAL WIRING Type of internal wiring, cleat wiring, CTS wiring, wooden casing capping, metal sheathed wiring,

6 th	1 st	Conduit wiring, their advantage and disadvantages comparison and applications.
	2 nd	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.
	3 rd	
	4 th	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.
7 th	1 st	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	
	3 rd	
8 th	1 st	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m ² and load within 10 KW.
	2 nd	
	3 rd	OVER HEAD INSTALLATION Main components of overhead lines, line supports, factors Governing Height of pole, conductor materials, determination of size of conductor for overhead transmission line, cross arms
	4 th	Pole brackets and clamps, guys and stays, conductors configurations, spacing and clearances, span lengths, overhead line insulators,
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	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
	3 rd	
	4 th	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
10 th	1 st	OVER HEAD 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	
	3 rd	Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building.
	4 th	Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter

11 th	1 st	Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.
	2 nd	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	ESTIMATING FOR DISTRIBUTION SUBSTATIONS Prepare one materials estimate for Pole mounted substation.
	4 th	Prepare one materials estimate for Plinth Mounted substation.
12 th	1 st	Discussion of probable questions and answers-1
	2 nd	Discussion of probable questions and answers-2
	3 rd	Discussion of probable questions and answers-3
	4 th	Discussion of probable questions and answers-4
13 th	1 st	Discussion of probable questions and answers-5
	2 nd	Discussion of probable questions and answers-6
	3 rd	Discussion of probable questions and answers-7
	4 th	Discussion of probable questions and answers-8