



DEPARTMENT OF ELECTRICAL ENGINEERING

Govt. Polytechnic, Balasore

LESSON PLAN FOR ACADEMIC SESSION - 2023-24 ELECTRICAL INSTALLATION AND ESTIMATING

Course Code : Th.4	Semester : 6th
Total Periods : 75(60+15) Periods	Examination : 3 Hours
Theory Periods : 4 P/Week	Internal Assessment : 20 Marks
Tutorial : - 1 P/Week	End Semester Examination : 80 Marks
Maximum Marks : 100	
Semester From Date : 16/01/2024	To Date : 8/05/2024
Name of Teaching Faculty: Er. CHANDRA PRAKASH LENKA	

Week	PERIOD	Theory Topics
1st	01	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.
	02	General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36,40, 41, 43, 44, 45, 46.
	03	General conditions relating to supply and use of energy : rule 47, 48, 49, 50, 51, 54, 55,56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 70.
	04	OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88,89,90,91.
	05	Tutorial classes
2nd	01	ELECTRICAL INSTALLATIONS: Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy.
	02	Methods of wiring, systems of wiring, wire and cable, conductor materials used in cables, insulating materials mechanical protection.
	03	Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general

		specifications of cables.
	04	ACCESSORIES: Main switch and distribution boards, conduits, conduit accessories and fittings, lighting accessories and fittings..
	05	Tutorial classes
3rd	01	Fuses, important definitions, determination of size of fuse – wire, fuse units.
	02	Earthing conductor, earthing, IS specifications regarding earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations.
	03	Material required for GI pipe earthing
	04	LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes.
	05	Tutorial classes
4th	01	Determination of number of points (light, fan, socket, outlets).
	02	Design of lighting schemes, factory lighting, public lighting installations.
	03	Street lighting, general rules for wiring.
	04	Determination of total load, determination of Number of sub-circuits.
	05	Tutorial classes
5th	01	INTERNAL WIRING: Type of internal wiring, metal sheathed wiring.
	02	Cleat wiring, CTS wiring.
	03	Wooden casing capping
	04	Conduit wiring, their advantage and disadvantages comparison and applications.
	05	Tutorial classes
6th	01	Conduit wiring, their advantage and disadvantages comparison and applications.
	02	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.
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	05	Tutorial classes
7th	01	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.
	02	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.
	03	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.
	04	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.
	05	Tutorial classes
8th	01	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.
	02	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.
	03	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.
	04	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m ² and load within 10 KW.
	05	Tutorial classes
9th	01	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m ² and load within 10 KW.
	02	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m ² and load within 10 KW.
	03	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, pole brackets and clamps, guys and stays.
	04	Conductors configurations, spacing and clearances, span lengths, 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.
	05	Tutorial classes
10th	01	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.
	02	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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	05	Tutorial classes
11th	01	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.
	02	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.
	03	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

	04	Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building
	05	Tutorial classes
12th	01	Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building.
	02	Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter
	03	Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter
	04	Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.
	05	Tutorial classes
13th	01	Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.
	02	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.
	03	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.
	04	ESTIMATING FOR DISTRIBUTION SUBSTATIONS: Introduction
	05	Tutorial classes
14th	01	Prepare one materials estimate for following types of transformer substations
	02	Prepare one materials estimate for following types of transformer substations
	03	Prepare one materials estimate for following types of transformer substations
	04	Pole mounted substation
	05	Tutorial classes
15th	01	Pole mounted substation
	02	Plinth Mounted substation.
	03	Plinth Mounted substation.
	04	Plinth Mounted substation.
	05	Tutorial classes

