ACADEMIC LESSON PLAN OF SUMMER 2024

		ESSUN PLAN OF SUMIVIER 2024
Discipline	Semester: - 6th	Name of the Teaching Faculty: -Rakesh kumar Pattanayk
Electrical Engg.	(Sec A)	
Subject: ELECTRICAL INSTALLATION AND ESTIMATING(TH-1)	No. of days/per week class allotted : 4p/week Tutorial:1p/w eek	Semester From: 16 th January 2024 to 26 th April 2024
Week	Class Day	Theory Topics
1 st	1 st	1. INDIAN ELECTRICITY RULES
		1.1 Definitions, Ampere, Apparatus, Accessible, Bare, cablew, 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 nd	1.2 General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.
	3 rd	1.3 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(cont)
	4 th	1.3 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
	5 th	Tutorial
2 nd	1 st	1.4 OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91.(cont)
	2 nd	1.4 OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91
	3 rd	2. ELECTRICAL INSTALLATIONS 2. 1 Electrical installations, domestics, 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. Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables(cont)
	4 th	2. 1 Electrical installations, domestics, 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. Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables(cont) Tutorial
3 rd	1 st	 2. 1 Electrical installations, domestics, 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. Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables(cont)

	nd	
	2 nd	2. 1 Electrical installations, domestics, 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. Types of cables
		used in internal wiring, multi-stranded cables,
		voltage grinding of cables, general specifications of cables.
	3 rd	
	3	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.
		Determination of size of earth wire and earth plate for domestic and
		industrial installations. Material required for GI pipe earthing(cont)
	4 th	2. 2 ACCESSORIES: Main switch and distribution boards, conduits,
	4	
		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.
		Determination of size of earth wire and earth plate for domestic and
		industrial installations. Material required for GI pipe earthing(cont)
	5 th	Tutorial
4 th	1 st	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.
		earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and
		earthing of electrical installations, points to be earthed.
	2 nd	earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and
	2 nd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 2. 2 ACCESSORIES: Main switch and distribution boards, conduits,
	2 nd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 2. 2 ACCESSORIES: Main switch and distribution boards, conduits, conduit accessories and fittings, lighting accessories and fittings,
	2 nd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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,
	2 nd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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
	2 nd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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.
	2 nd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and
		 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing.
	2 nd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types
		 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes, design of lighting schemes, factory lighting,
		 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types
		 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 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,
		 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 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, determination of number of points (light, fan, socket, outlets),
		 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 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, determination of number of points (light, fan, socket, outlets), determination of total load, determination of Number of sub-circuits.
	3 rd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 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, determination of total load, determination of Number of sub-circuits. (cont)
		 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont) 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types
	3 rd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont) 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes, design of lighting schemes, factory lighting, determination of total load, determination of Number of sub-circuits. (cont)
	3 rd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont) 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont)
	3 rd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont) 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont)
	3 rd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont) 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont)
	3 rd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont) 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont) 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, determination of number of points (light, fan, socket, outlets), determination of total load, determination of Number of sub-circuits. (cont)
	3 rd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont) 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, determination of total load, determination of Number of sub-circuits. (cont) 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, determination of total load, determination of Number of sub-circuits. (cont)
5 th	3 rd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont) 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, determination of total load, determination of Number of sub-circuits. (cont) 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, determination of number of points (light, fan, socket, outlets), determination of number of points (light, fan, socket, outlets), determination of number of points (light, fan, socket, outlets), determination of number of points (light, fan, socket, outlets), determination of total load, determination of Number of sub-circuits. (cont) Tutorial
5 th	3 rd	 earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing(cont) 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. Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing. 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont) 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Types of lighting installations, street lighting, general rules for wiring, determination of total load, determination of Number of sub-circuits. (cont) 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, determination of total load, determination of Number of sub-circuits. (cont)

		public lighting installations, street lighting, general rules for wiring,
		determination of number of points (light, fan, socket, outlets),
		determination of total load, determination of Number of sub-circuits.
	pd	(cont)
	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,
		determination of number of points (light, fan, socket, outlets),
		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, metal sheathed wiring, conduit wiring, their
		advantage and disadvantages comparison and applications.(cont)
	4 th	3.1 Type of internal wiring, cleat wiring, CTS wiring, wooden
		casing capping, metal sheathed wiring, conduit wiring, their
		advantage and disadvantages comparison and applications.(cont)
	5 th	Tutorial
6 th	1 st	3.1 Type of internal wiring, cleat wiring, CTS wiring, wooden
		casing capping, metal sheathed wiring, conduit wiring, their
		advantage and disadvantages comparison and applications.
	2 nd	3.2 Prepare one estimate of materials required for CTS wiring for
		small domestic installation of one room and one verandah within 25
		m2 with given light, fan & plug points.(cont).
	3 rd	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.(cont).
	4 th	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.
	5 th	Tutorial
7 th	1 st	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.(cont)
	2 nd	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.
	3 rd	3.4 Prepare one estimate of materials required for concealed wiring
	5	for domestic installation of two rooms and one latrine, bath, kitchen
		& verandah within 80m ₂ with given light, fan & plug points(cont)
	4 th	3. 4 Prepare one estimate of materials required for concealed wiring
	4	for domestic installation of two rooms and one latrine, bath, kitchen
		& verandah within 80m ² with given light, fan & plug points.
	5 th	Tutorial
8 th	1 st	
0		3.5 Prepare one estimate of materials required for erection of
		conduct wiring to a small workshop installation about 30m ₂ and load
	2 nd	within 10 KW(cont)
	2	3.5 Prepare one estimate of materials required for erection of
		conduct wiring to a small workshop installation about 30m ₂ and load
	3 rd	within 10 KW.
	1 37	4. OVER HEAD INSTALLATION

r		
	4 th	 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, cross arms, pole brackets and clamps, guys and stays, 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.(cont) 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, cross arms, pole brackets and clamps, guys and stays, 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 line insulators, types of insulators, lighting arresters, danger plates, anti-climbing devices, bird guards, beads of jumpers, jumpers, tee-offs, guarding of overhead lines.(cont)
	5 th	
9 th	1 st	Tutorial4.1 Main components of overhead lines, line supports, factorsGoverning Height of pole, conductor materials, determination of size of conductor for overhead transmission line, cross arms, pole brackets and clamps, guys and stays, 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.(cont)
	2 nd	 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, cross arms, pole brackets and clamps, guys and stays, 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.
	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), current carrying capacity and voltage regulation consideration using ACSR(cont)
	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(cont)
th	5 th	Tutorial
10 th	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. 4.3. Prepare an estimate of materials required for LT distribution
	۷	4.3. Prepare an estimate of materials required for LT distribution

	1	
		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	4.3. 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
	4 th	regulation consideration using ACSR.
	4	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 carryingcapacity and voltage regulation of the size of
		conductor (from conductor chart), current carrying capacity and
		voltage regulation consideration using ACSR(cont)
	5 th	Tutorial
11 th	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 carryingcapacity and voltage regulation of the size of
		conductor (from conductor chart), current carrying capacity and
	- nd	voltage regulation consideration using ACSR(cont)
	2 nd	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 carryingcapacity and voltage regulation of the size of
		conductor (from conductor chart), current carrying capacity and
		voltage regulation consideration using ACSR.
	3 rd	5. OVER HEAD SERVICE LINES
		5.1 Components of service lines, service line (cables and
		conductors), bearer wire, lacing rod. Ariel fuse, service
		support.(cont)
		support.(cont)
	th	
	4 th	5.1 Components of service lines, service line (cables and
		conductors), bearer wire, lacing rod. Ariel fuse, service
		support.(cont)
	5 th	Tutorial
12 th	1 st	5.1 Components of service lines, service line (cables and
		conductors), bearer wire, lacing rod. Ariel fuse, service support.
	2 nd	5.2 Prepare and estimate for providing single phase supply of load of
	-	5 KW (light, fan, socket) to a single stored residential
		building.(cont)
	3 rd	
	5	5.2 Prepare and estimate for providing single phase supply of load of
		5 KW (light, fan, socket) to a single stored residential
	+h	building.(cont)
	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	Tutorial
13 th	1 st	5.3 Prepare and estimate for providing single phase supply load of
		3KW to eachfloor of a double stored building having separate

		energy meter.(cont)
	2 nd	5.3 Prepare and estimate for providing single phase supply load of 3KW to eachfloor of a double stored building having separate
		energy meter
	3 rd	5.4 Prepare one estimate of materials required for service connection
		to a factorybuilding with load within 15 KW using insulated
		wire.(cont)
	4 th	5.4 Prepare one estimate of materials required for service connection
		to a factorybuilding with load within 15 KW using insulated wire
	5 th	Tutorial
14 th	1 st	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.(cont)
	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	6. ESTIMATING FOR DISTRIBUTION SUBSTATIONS
		6.1 Prepare one materials estimate for following types of
	*•	transformer substations.(cont)
	4 th	6.1 Prepare one materials estimate for following types of
	*•	transformer substations
44	5 th	Tutorial
15 th	1 st	6.1.1 Pole mounted substation.(cont)
	2 nd	6.1.1 Pole mounted substation
	3 rd	6.1.2 Plinth Mounted substation.(cont)
	4 th	6.1.2 Plinth Mounted substation
	5 th	Tutorial

Rakesh Kuman Pattanayak

Signature of Teaching Faculty

ACADEMIC LESSON PLAN OF SUMMER 2024

Discipline	Semester: -	Name of the Teaching Faculty: - Rakesh kumar Pattanayak
	6th	
Electrical Engg.	(Sec B)	
Subject: ELECTRICAL INSTALLATION AND ESTIMATING(TH-1)	No. of days/per week class allotted : 4p/week Tutorial:1p/w eek	Semester From: 16 th January 2024 to 26 th April 2024
Week	Class Day	Theory Topics
1 st	1 st	1. INDIAN ELECTRICITY RULES 1.1 Definitions, Ampere, Apparatus, Accessible, Bare, cablew, 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 nd	1.2 General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.
	3 rd	1.3 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(cont)
	4 th	1.3 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
	5 th	Tutorial
2 nd	1 st	1.4 OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91.(cont)
	2 nd	1.4 OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91
	3 rd	2. ELECTRICAL INSTALLATIONS 2. 1 Electrical installations, domestics, 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. Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables(cont)
	4 th	2. 1 Electrical installations, domestics, 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. Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables(cont) Tutorial
3 rd	1 st	2. 1 Electrical installations, domestics, 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. Types of cables	
	3
used in internal wiring, multi-stranded cables,	
voltage grinding of cables, general specifications of cables(cont.	.)
2 nd 2. 1 Electrical installations, domestics, 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. Types of cables	3
used in internal wiring, multi-stranded cables,	
voltage grinding of cables, general specifications of cables.	
3 rd 2. 2 ACCESSORIES: Main switch and distribution boards, condui	ts,
conduit accessories and fittings, lighting accessories and fittings,	
fuses, important definitions, determination of size of fuse – wire,	
fuse units. Earthing conductor, earthing, IS specifications regardin	g
earthing of electrical installations, points to be earthed.	
Determination of size of earth wire and earth plate for domestic an	ıd
industrial installations. Material required for GI pipe earthing(cont)
4 th 2. 2 ACCESSORIES: Main switch and distribution boards, condui	ts,
conduit accessories and fittings, lighting accessories and fittings,	
fuses, important definitions, determination of size of fuse – wire,	
fuse units. Earthing conductor, earthing, IS specifications regardin	g
earthing of electrical installations, points to be earthed.	-
Determination of size of earth wire and earth plate for domestic an	d
industrial installations. Material required for GI pipe earthing(cont	
5 th Tutorial	
4 th 1 st 2. 2 ACCESSORIES: Main switch and distribution boards, condui	ts,
conduit accessories and fittings, lighting accessories and fittings,	
fuses, important definitions, determination of size of fuse – wire,	
fuse units. Earthing conductor, earthing, IS specifications regardin	g
earthing of electrical installations, points to be earthed.	-
Determination of size of earth wire and earth plate for domestic an	ıd
industrial installations. Material required for GI pipe earthing(cont)
2 nd 2. 2 ACCESSORIES: Main switch and distribution boards, condui	ts,
conduit accessories and fittings, lighting accessories and fittings,	
fuses, important definitions, determination of size of fuse – wire,	
fuse units. Earthing conductor, earthing, IS specifications regardin	g
earthing of electrical installations, points to be earthed.	-
Determination of size of earth wire and earth plate for domestic an	ıd
industrial installations. Material required for GI pipe earthing.	
3 rd 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Typ	bes
of lighting schemes, design of lighting schemes, factory lighting,	
public lighting installations, street lighting, general rules for wiring	g,
determination of number of points (light, fan, socket, outlets),	-
determination of total load, determination of Number of sub-circui	ts.
(cont)	
4 th 2. 3 LIGHTING SCHEME: Aspects of good lighting services. Typ	bes
of lighting schemes, design of lighting schemes, factory lighting,	
public lighting installations, street lighting, general rules for wiring	g,
determination of number of points (light, fan, socket, outlets),	
	ts.

	5 th	Tutorial
5 th	1 st	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,
		determination of number of points (light, fan, socket, outlets),
		determination of total load, determination of Number of sub-circuits.
		(cont)
	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,
		determination of number of points (light, fan, socket, outlets),
		determination of total load, determination of Number of sub-circuits.
	3 rd	3. INTERNAL WIRING
	5	3. 1 Type of internal wiring, cleat wiring, CTS wiring, wooden
		casing capping, metal sheathed wiring, conduit wiring, their
	4 th	advantage and disadvantages comparison and applications.(cont)
	4	3.1 Type of internal wiring, cleat wiring, CTS wiring, wooden
		casing capping, metal sheathed wiring, conduit wiring, their
	th	advantage and disadvantages comparison and applications.(cont)
~th	5 th	Tutorial
6^{th}	1 st	3.1 Type of internal wiring, cleat wiring, CTS wiring, wooden
		casing capping, metal sheathed wiring, conduit wiring, their
		advantage and disadvantages comparison and applications.
	2 nd	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.(cont).
	3 rd	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.(cont).
	4 th	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.
	5 th	Tutorial
7 th	1 st	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.(cont)
	2 nd	3. 3 Prepare one estimate of materials required for conduit wiring
	<u>۲</u>	for small domestic installation of one room and one verandha within
	_ rd	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 80m ² with given light, fan & plug points(cont)
	4 th	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.
	5 th	Tutorial
	1 st	3.5 Prepare one estimate of materials required for erection of
$8^{ m th}$		conduct wiring to a small workshop installation about 30m ₂ and load
		within 10 KW(cont)

		conduct wining to a small workshop installation shout 20m and load
		conduct wiring to a small workshop installation about 30m ₂ and load within 10 KW.
	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, cross arms, pole
		brackets and clamps, guys and stays, 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.(cont)
	4 th	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, cross arms, pole
		brackets and clamps, guys and stays, 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.(cont)
	5 th	Tutorial
9^{th}	1 st	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, cross arms, pole
		brackets and clamps, guys and stays, 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
	nd	overhead lines.(cont)
	2 nd	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, cross arms, pole
		brackets and clamps, guys and stays, 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
	3 rd	overhead lines.
	3	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
	4 th	regulation consideration using ACSR(cont)
	4	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
	5 th	regulation consideration using ACSR(cont) Tutorial
10 th	51 st	
10	1	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

		comprise conspirity and voltage
		carrying capacity and voltage
	2 nd	regulation consideration using ACSR.
	2	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
	- rd	regulation consideration using ACSR.
	3 rd	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.
	4 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 carryingcapacity and voltage regulation of the size of
		conductor (from conductor chart), current carrying capacity and
		voltage regulation consideration using ACSR(cont)
	5 th	Tutorial
11 th	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 carryingcapacity and voltage regulation of the size of
		conductor (from conductor chart), current carrying capacity and
	2 nd	voltage regulation consideration using ACSR(cont)
	2	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 carryingcapacity and voltage regulation of the size of
		conductor (from conductor chart), current carrying capacity and
	rd	voltage regulation consideration using ACSR.
	3 rd	5. OVER HEAD SERVICE LINES
		5.1 Components of service lines, service line (cables and
		conductors), bearer wire, lacing rod. Ariel fuse, service
		support.(cont)
	4 th	5.1 Components of service lines, service line (cables and
		conductors), bearer wire, lacing rod. Ariel fuse, service
		support.(cont)
	5 th	Tutorial
12 th	1 st	5.1 Components of service lines, service line (cables and
		conductors), bearer wire, lacing rod. Ariel fuse, service support.
	2 nd	5.2 Prepare and estimate for providing single phase supply of load of
		5 KW (light, fan, socket) to a single stored residential
		building.(cont)
	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.(cont)
	4 th	5.2 Prepare and estimate for providing single phase supply of load of
		5.2 repare and estimate for providing single phase suppry of foad of

		5 KW (light, fan, socket) to a single stored residential building.
	5 th	Tutorial
13 th	1 st	5.3 Prepare and estimate for providing single phase supply load of 3KW to eachfloor of a double stored building having separate energy meter.(cont)
	2 nd	5.3 Prepare and estimate for providing single phase supply load of 3KW to eachfloor of a double stored building having separate energy meter
	3 rd	5.4 Prepare one estimate of materials required for service connection to a factorybuilding with load within 15 KW using insulated wire.(cont)
	4 th	5.4 Prepare one estimate of materials required for service connection to a factorybuilding with load within 15 KW using insulated wire
	5 th	Tutorial
14 th	1 st	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.(cont)
	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	6. ESTIMATING FOR DISTRIBUTION SUBSTATIONS 6.1 Prepare one materials estimate for following types of transformer substations.(cont)
	4 th	6.1 Prepare one materials estimate for following types of transformer substations
	5 th	Tutorial
15 th (Extra class)	1 st	6.1.1 Pole mounted substation.(cont)
	2 nd	6.1.1 Pole mounted substation
	3 rd	6.1.2 Plinth Mounted substation.(cont)
	4 th	6.1.2 Plinth Mounted substation
	5 th	Tutorial

Rakesh	Kaeman	pattana	Sar

Signature of Teaching Faculty