



# GANDHI SCHOOL OF ENGINEERING

**BHABANDHA, BERHAMPUR**

**BRANCH:- ELECTRICAL ENGINEERING**

**SEMESTER:- 6<sup>TH</sup>**

**SUBJECT:- ELECTRICAL INSTALLATION AND ESTIMATING**

**Name of the Faculty- ER.DEEPAK KUMAR MAHARANA**

Sl. No	Topic/Module	No. of period	Details of the topics	Date	Topic No.	Topic Name	Date	Remarks
1	INDIAN ELECTRICITY RULES	06	1.1 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.  1.2 General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.  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.  1.4 OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91	13.02.2023 TO 21.02.2023	1.1  1.2  1.3  1.4	Definitions, Ampere, Apparatus, Accessible, Bare, cable, circuit, circuit breaker, conductor voltage  General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.  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  OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91	13.02.2023 14.02.2023  15.02.2023 16.02.2023  17.02.2023 20.02.2023  21.02.2023 21.02.2023	

2	<b>ELECTRICAL INSTALLATIONS</b>	12	<p>2. 1 Electrical installations, domestics, industrial, Wiring System, Internal distribution ofElectrical Energy. Methods of wiring, systems of wiring, wire and cable, conductor materials usedin cables, insulating materials mechanical Protection. Types of cables used in internal wiring, multi-stranded cables, voltage grindingof cables, general specifications of cables.</p> <p>2. 2 ACCESSORIES: Main switch and distributionboards, 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 ofelectrical 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.</p> <p>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.</p>	22.03.2023 TO 12.032023	2.1	<p>Electrical installations, domestics, industrial, Wiring System, Internal distribution ofElectrical Energy</p> <p>Main switch and distribution boards, conduits, conduit accessories and fittings, lighting accessories and fittings, fuses, important definitions, determination of size of fuse, Determination of size of earth wire and earth plate for domestic and industrial installations. Material required for GI pipe earthing.</p>	<p>22.02.2023 23.02.2023 27.02.2023</p> <p>28.02.2023 01.02.2023 02.02.2023</p> <p>06.02.2023 09.02.2023</p>	
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3	<b>INTERNAL WIRING</b>	12	<p>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.</p> <p>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 &amp; plug points.</p> <p>3 . 3 Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and one verandha within 25 m2 with given light, fan &amp; plug points.</p> <p>3. 4 Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen &amp; verandah within 80m2 with given light, fan &amp; plug points.</p> <p>3.5 Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW.</p>	13.03.2023 TO 26.03.2023	<p>3.1</p> <p>3.2</p> <p>3.3</p> <p>3.4</p> <p>3.5</p>	<p>Type of internal wiring, cleat wiring, CTS wiring, wooden casing capping, metal sheathed wiring, conduit wiring</p> <p>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 &amp; plug points.</p> <p>Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and one verandah within 25 m2 with given light, fan &amp; plug points.</p> <p>Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen &amp; verandah within 80m2 with given light, fan &amp; plug points</p> <p>Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW.</p>	<p>13.03.2023</p> <p>14.03.2023</p> <p>14.03.2023</p> <p>15.03.2023</p> <p>16.03.2023</p>	
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4	<b>OVER HEAD INSTALLATION</b>	12	<p>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.</p> <p>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.</p> <p>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.</p>	27.03.2023 TO 11.04.2023	4.1	<p>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</p> <p>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</p> <p>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</p>	17.03.2023 18.03.2023  20.03.2023 21.03.2023 24.03.2023  25.03.2023 27.03.2023 04.04.2023	
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			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 consider action using ACSR.		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	10.04.2023 11.04.2023 15.04.2023 17.04.2023	
5	<b>OVER HEAD SERVICE LINES</b>	12	<p>5. 1 Components of service lines, service line (cables and conductors), bearer wire, lacing rod. Ariel fuse, service support, energy box and meters etc.</p> <p>5. 2 Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building.</p> <p>5. 3 Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energymeter.</p> <p>5.4 Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.</p>	14.04.2023 TO 29.04.2023	5.1  5.2  5.3  5.4	<p>Components of service lines, service line (cables and conductors), bearer wire, lacing rod. Ariel fuse, service support, energy box and meters etc.</p> <p>Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building.</p> <p>Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energymeter.</p> <p>Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.</p>	18.04.2023 21.04.2023 24.04.2023 25.04.2023  28.04.2023 29.04.2023 01.05.2023  02.05.2023 05.05.2023  06.05.2023 08.05.2023	

			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.		5.5	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.	09.05.2023 12.05.2023	
6	<b>ESTIMATING FOR DISTRIBUTION SUBSTATIONS</b>	06	6. 1 Prepare one materials estimate for following types of transformer substations. 6.1.1 Pole mounted substation. 6.1.2 Plinth Mounted substation.	30.04.2023 TO 07.05.2023	6.1 6.1.1 6.1.2	Types of transformer substations. Pole mounted substation. Plinth Mounted substation.	13.05.2023 15.05.2023 16.05.2023 20.05.2023 22.05.2023 23.05.2023	

  
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