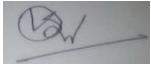




## UTKAL INSTITUTE OF ENGINEERING & TECHNOLOGY

| DISCIPLINE:<br>electrical engineering                         | SEMESTER:<br>6TH Sem                                   | NAME OF THE TEACHING FACULTY: KALAKAR MOHANTY   |         |                |
|---|--|---|---------|----------------|
| SUBJECT:<br>Th1. ELECTRICAL<br>INSTALLATION AND<br>ESTIMATING | No of Days/Per week class<br>allotted: 5 Class P/W(60) | Semester From Date:16/01/2024<br>2023To Date: 26/04/2024<br>No. Of Weeks: 12  |         |                |
| WEEK  | CLASS DAY  | THEORY TOPICS<br><u>PART-A INDIAN ELECTRICITY RULES</u>   | REMARKS |                |
| 1st   | 1st  | N ELECTRICITY RULES<br>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. | Date    | Dean/Principal |
|   | 2nd  | N ELECTRICITY RULES<br>1.1 Definitions, Ampere, Apparatus, Accessible, Bare, cable, circuit, circuit breaker,   |         |                |
|   | 3rd  | General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.  |         |                |
|   | 4th  | General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36, 40, 41, 43, 44, 45, 46.  |         |                |
|   | 5th  | 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   |         |                |
| 2nd   | 1st  | OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88, 89, 90, 91  |         |                |
|   | 2nd  | <b><u>PART B : ELECTRICAL INSTALLATIONS</u></b> : Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy. Methods of wiring, systems of wiring, wire and cable,   |         |                |
|   | 3rd  | Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy. Methods of wiring, systems of wiring, wire and cable,   |         |                |
|   | 4th  | Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy. Methods of wiring, systems of wiring, wire and cable,   |         |                |
|   | 5th  | Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy. Methods of wiring, systems of wiring, wire and cable,   |         |                |
| 3rd   | 1st  | 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   |         |                |
|   | 2nd  | 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   |         |                |
|   | 3rd  | 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   |         |                |
|   | 4th  | 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   |         |                |
|   | 5th  | LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes, design of lighting schemes, factory lighting, public lighting installations,   |         |                |
| 4th   | 1st  | LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes, design of lighting schemes, factory lighting, public lighting installations,   |         |                |
|   | 2nd  | LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes, design of lighting schemes, factory lighting, public lighting installations,   |         |                |
|   | 3rd  | LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes, design of lighting schemes, factory lighting, public lighting installations,   |         |                |
|   | 4th  | <b><u>PART C (INTERNAL WIRING) :</u></b> 1 Type of internal wiring, cleat wiring, CTS wiring, wooden casing capping, metal sheathed wiring, conduit wiring, their advantage and disadvantages   |         |                |
|   | 5th  | 1 Type of internal wiring, cleat wiring, CTS wiring, wooden casing capping, metal sheathed wiring, conduit wiring, their advantage and disadvantages  |         |                |
| 5th   | 1st  | 1 Type of internal wiring, cleat wiring, CTS wiring, wooden casing capping, metal sheathed wiring, conduit wiring, their advantage and disadvantages  |         |                |

|                  |                 |   |  |  |
|------------------|-----------------|---|--|--|
|                  | 2 <sup>nd</sup> | 1 Type of internal wiring, cleat wiring, CTS wiring, wooden casing capping, metal sheathed wiring, conduit wiring, their advantage and disadvantages  |  |  |
|                  | 3 <sup>rd</sup> | 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  |  |  |
|                  | 4 <sup>th</sup> | 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 & plug points.  |  |  |
|                  | 5 <sup>th</sup> | 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   |  |  |
| 6 <sup>th</sup>  | 1 <sup>st</sup> | 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   |  |  |
|                  | 2 <sup>nd</sup> | Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m2  |  |  |
|                  | 3 <sup>rd</sup> | Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m2  |  |  |
|                  | 4 <sup>th</sup> | Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW.  |  |  |
|                  | 5 <sup>th</sup> | Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW.  |  |  |
| 7 <sup>th</sup>  | 1 <sup>st</sup> | <b>PART D (OVER HEAD INSTALLATION) :</b> . Main components of overhead lines, line supports, factors Governing Height of pole, conductor materials, determination of size of conductor for overhead   |  |  |
|                  | 2 <sup>nd</sup> | .Main components of overhead lines, line supports, factors Governing Height of pole, conductor materials, determination of size of conductor for overhead   |  |  |
|                  | 3 <sup>rd</sup> | .Main components of overhead lines, line supports, factors Governing Height of pole, conductor materials, determination of size of conductor for overhead   |  |  |
|                  | 4 <sup>th</sup> | 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  |  |  |
|                  | 5 <sup>th</sup> | 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  |  |  |
| 8 <sup>th</sup>  | 1 <sup>st</sup> | 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  |  |  |
|                  | 2 <sup>nd</sup> | 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  |  |  |
|                  | 3 <sup>rd</sup> | 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  |  |  |
|                  | 4 <sup>th</sup> | 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  |  |  |
|                  | 5 <sup>th</sup> | 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 |  |  |
| 9 <sup>th</sup>  | 1 <sup>st</sup> | 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 |  |  |
|                  | 2 <sup>nd</sup> | 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 |  |  |
|                  | 3 <sup>rd</sup> | <b>PART E (OVER HEAD SERVICE LINES) :</b> Components of service lines, service line (cables and conductors), bearer wire, lacing rod, Ariel fuse, service support, energy box and meters etc  |  |  |
|                  | 4 <sup>th</sup> | Components of service lines, service line (cables and conductors), bearer wire, lacing rod, Ariel fuse, service support, energy box and meters etc  |  |  |
|                  | 5 <sup>th</sup> | Components of service lines, service line (cables and conductors), bearer wire, lacing rod, Ariel fuse, service support, energy box and meters etc  |  |  |
| 10 <sup>th</sup> | 1 <sup>st</sup> | Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building   |  |  |
|                  | 2 <sup>nd</sup> | Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building   |  |  |
|                  | 3 <sup>rd</sup> | Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building   |  |  |
|                  | 4 <sup>th</sup> | Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter.  |  |  |
|                  | 5 <sup>th</sup> | Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter.  |  |  |
| 11 <sup>th</sup> | 1 <sup>st</sup> | Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter.  |  |  |
|                  | 2 <sup>nd</sup> | 4 Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire   |  |  |

|                            |     |  |   |  |
|----------------------------|-----|--|---|--|
|                            | 3rd | 4 Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire                                      |   |  |
|                            | 4th | 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.           |   |  |
|                            | 5th | <b>PART F (ESTIMATING FOR DISTRIBUTION SUBSTATION) :</b><br>Prepare one materials estimate for following types of transformer substations.<br>1.1 Pole mounted substation. |   |  |
| 12th                       | 1st | Prepare one materials estimate for following types of transformer substations<br>Pole mounted substation.<br>Plinth Mounted substation.                                    |   |  |
|                            | 2nd | Prepare one materials estimate for following types of transformer substations<br>Pole mounted substation.<br>Plinth Mounted substation.                                    |   |  |
|                            | 3rd | Prepare one materials estimate for following types of transformer substations. 1.1<br>Pole mounted substation.<br>1.2 Plinth Mounted substation.                           |   |  |
|                            | 4th | Prepare one materials estimate for following types of transformer substations 1.1<br>Pole mounted substation.<br>1.2 Plinth Mounted substation.                            |   |  |
|                            | 5th | Prepare one materials estimate for following types of transformer substations 1.1<br>Pole mounted substation.<br>1.2 Plinth Mounted substation.                            |   |  |
| <b>HOD</b>                 |     | <b>DEAN</b>  | <b>PRINCIPAL</b>  |  |
| <i>Chittaranjan Parida</i> |     | <i>Chittaranjan Parida</i>   |  |  |