

KIIT POLYTECHNIC, BHUBANESWAR

LESSON PLAN Session (2023-2024)

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| Discipline: Electrical | Semester: 4 th Summer/2024 | Name of the Faculty: Rakesh Roshan, (Lecturer) Email ID: rakesh.roshanfel@kp.kiit.ac.in |
| Subject: Generation, Transmission & Distribution (Theory-4) | No. of Days/week: 04 | Start Date: 16/01/2024 End Date: 26/04/2024 |

| Week | Class Day | Theory Topics |
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| 1st | 1st | GENERATION OF ELECTRICITY Elementary idea on generation of electricity from Thermal, Hydel power station. |
| | 2nd | Introduction to Nuclear Power station. |
| | 3rd | Introduction to Solar Power Plant (Photovoltaic cells) |
| | 4th | Layout diagram of generating stations. |
| 2nd | 1st | Draw layout of transmission and distribution scheme. |
| | 2nd | TRANSMISSION OF ELECTRIC POWER Voltage Regulation & efficiency of transmission. |
| | 3rd | Corona and Corona loss on transmission lines. |
| | 4th | OVER HEAD LINES Kelvin's law for economical size of conductor |
| 3rd | 1st | State types of supports, size and spacing of conductor. |
| | 2nd | Types of conductor materials |
| | 3rd | State types of insulator and cross arms. |

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| | 4th | Derive for sag in overhead line with support at same level. |
| 4th | 1st | Derive for sag in overhead line with support at different level. |
| | 2nd | Approximate formula effect of wind, ice and temperature on sag simple problem. |
| | 3dr | Problems on sag with support at different level. |
| | 4th | Problems on sag on taking the effect of wind, ice and temperature. |
| 5th | 1st | PERFORMANCE OF SHORT & MEDIUM LINES Calculation of regulation and efficiency of short transmission line. |
| | 2nd | Calculation of regulation and efficiency of medium transmission line by nominal T-method |
| | 3rd | Calculation of regulation and efficiency of medium transmission line by nominal pie-method, Problems on Nominal-T & Nominal- π method. |
| | 4th | Quiz Test-2 |
| 6th | 1st | EHV TRANSMISSION Explain EHV AC transmission. Explain HVDC transmission. |
| | 2nd | Reasons for adoption of EHV AC transmission |
| | 3rd | Problems involved in EHV transmission. |
| | 4th | Advantages and Limitations of HVDC transmission system |
| 7th | 1st | DISTRIBUTION SYSTEMS Introduction to Distribution System. |
| | 2nd | Connection Schemes of Distribution System (Radial, Ring Main) |
| | 3rd | Connection Schemes of Inter connected system Distribution System |
| | 4th | DC Distributor- Distributor fed at one end & problems |
| 8th | 1st | DC Distributor- Distributor fed at both end & problems |
| | 2nd | Ring Distributors & Problems. |
| | 3rd | Method of solving AC distribution & problems |

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| | 4th | Three phase -four wire star connected system arrangement. |
| 9th | 1st | Numerical problem on D.C distributor |
| | 2nd | UNDERGROUND CABLES Cable insulation and classification of cables |
| | 3rd | Types of L. T. & H.T. cables with constructional feature. |
| | 4th | Explain Methods of cable lying |
| 10th | 1st | Localization of cable faults – Murray loop test for short circuit fault |
| | 2nd | Localization of cable faults – Murray loop test for Earth fault. |
| | 3rd | ECONOMIC ASPECTS Causes of low power factor |
| | 4th | Methods of improvement of power factor |
| 11th | 1st | Factors affecting the economics of generation: (Define and explain) Load curves, Demand factor, Maximum demand, Load factor. |
| | 2nd | Diversity factor, Plant capacity factor. |
| | 3rd | Numerical problems on different factors |
| | 4th | Numerical problems on different factors. |
| 12th | 1st | Peak load and Base load on power station. |
| | 2nd | TYPES OF TARIFF Desirable characteristic of a tariff. |
| | 3rd | flat rate and two part tariff |
| | 4th | block rate tariff with problems |
| 13th | 1st | Numerical problem on tariff |
| | 2nd | Numerical problem on tariff |
| | 3rd | SUBSTATION Layout of LT substation. |
| | 4th | Layout of HT substation. |
| 14th | 1st | Layout of EHT substation. |
| | 2nd | Earthling of Substation, transmission and distribution lines |
| | 3rd | Review Class |
| | 4th | Quiz Test-2 |

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| 15th | 1st | Expected Questions Discussion & Practice Test 1 |
| | 2nd | Expected Questions Discussion & Practice Test 2 |
| | 3rd | Expected Questions Discussion & Practice Test 3 |
| | 4th | Expected Questions Discussion & Practice Test 4 |