# LESSON PLAN

| **Discipline:** Elect. Engg. | **Semester:** Fifth (5th)2023-24 | **Name of the Faculty: PRANAY ROUT** |
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| **Subject:** Utilization of Electrical Energy & Traction | **No. of days/week class allotted:** Five (5) | **No. of Weeks:** 15 |
| **WEEK** | **CLASS DAY** | **THEORY TOPICS** |
| 1st | 1st | Definition and Basic Principle of electro deposition, Important terms regarding electrolysis |
| | 2nd | Laws of electrolysis |
| | 3rd | Faradays Definition of Current efficiency, energy efficiency |
| | 4th | principle of electro deposition |
| | 5th | Factors affecting the amount of electro deposition |
| 2nd | 1st | Factors affecting the amount of electro deposition Factors governing the Better electro- deposition |
| | 2nd | State simple Examples of extraction of metals |
| | 3rd | State simple Examples of extraction of metals (Cont…) |
| | 4th | Application of electrolysis |
| | 5th | **Review Class** |
| 3rd | 1st | Advantage of electrical heating |
| | 2nd | Explain Mode of heat transfer & stephens law |
| | 3rd | Discuss principle of resistance heating(direct) |
| | 4th | Discuss principle of resistance heating(indirect) |
| | 5th | Explain working principle of direct arc furnace and indirect arc furnace |
| 4th | 1st | principle of induction heating |
| | 2nd | Working principle of direct core type, vertical core type & indirect core type induction furnace |
| | 3rd | principle of coreless induction furnace &skin effect |

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| | 4th | principle of dielectric heating & its application |
| | 5th | **Monthly test** |
| 5th | 1st | principle of microwave heating & its application |
| | 2nd | **Review Class** |
| | 3rd | Explain Principle Of arc welding |
| | 4th | Discuss DC arc phenomena |
| | 5th | Discuss AC arc phenomena |
| 6th | 1st | DC arc welding plants of single and multi operation type |
| | 2nd | AC arc welding plants of single and multi operation type |
| | 3rd | Types of arc welding |
| | 4th | Explain Principle of resistance welding |
| | 5th | Descriptive Study of different resistance welding methods |
| 7th | 1st | **Review Class** |
| | 2nd | Nature of radiation and its spectrum |
| | 3rd | Terms used in illuminations. Luminous intensity, lumen and intensity of illumination |
| | 4th | MHCP,MSCP,MHSCP |
| | 5th | **Monthly test** |
| 8th | 1st | Brightness, solid angle and luminous efficiency |
| | 2nd | Explain the inverse square law and the cosine law |
| | 3rd | Explain polar curves |
| | 4th | Describe Light distribution and control. Explain related definitions like maintenance factor and depreciation factor |
| | 5th | Design Simple lighting schemes and depreciation factor |

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| 9th | 1st | Constructional features and working of Filament lamps , effect of variation of voltage on working of filament lamps. |
| | 2nd | Explain discharge lamps. |
| | 3rd | State Basic idea about excitation in gas discharge lamps |
| | 4th | State constructional features and operation of fluorescent lamp(PL and PLL lamps) |
| | 5th | Sodium vapor lamps<br>High pressure mercury vapor lamps |
| 10th | 1st | Neon sign Lamps |
| | 2nd | High lumen output and low consumption F.L |
| | 3rd | **Review Class** |
| | 4th | **Monthly test** |
| | 5th | State Group drive & individual drive |
| 11th | 1st | Method of Choice of electric drives |
| | 2nd | Explain Starting & running characteristics of DC motor |
| | 3rd | Starting & running characteristics of AC motor |
| | 4th | State Application of DC motor |
| | 5th | State Application of 3phase induction motor |
| 12th | 1st | Application of 3phase synchronous ,1phase induction motor, series motor, universal motor , repulsion motor. |
| | 2nd | **Review Class** |
| | 3rd | Explain System of traction |

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| | 4th | System of track electrification |
| | 5th | Running characteristics of DC and AC traction motor |
| 13th | 1st | Explain control of motorTapped field control |
| | 2nd | Rheostat control |
| | 3rd | Series parallel control |
| | 4th | Multi-unit Control |
| | 5th | Metadyne control |
| 14th | 1st | Explain Breaking of the following types<br>Regenerative Breaking |
| | 2nd | Breaking with 1-ph series motor |
| | 3rd | Magnetic Breaking |
| | 4th | **Review Class** |
| | 5th | **Monthly test** |
| 15th | 1st | revision |
| | 2nd | revision |
| | 3rd | revision |
| | 4th | revision |
| | 5th | revision |