

| Dicipline: | EE | Semester: 5 th | Name of the Teaching Faculty: Smita ree Jena | |
|--|-----------------------------------|--|--|--|
| Subject: Utilization of electrical energy & Traction | No of Days/Week Class Allotted: 4 | Semester From date: 15.9.22 To date: 12.01.23 | No. of Weeks: 14 | |
| WEEK | Class Day | Theory Topics | | |
| | 1st | Definition and basic principle of electro deposition | | |
| | 2nd | Definition and basic principle of electro deposition | | |
| | 3rd | Faraday's laws of electrolysis | | |
| | 4th | Definitions of current efficiency, Energy efficiency | | |
| | 5th | | | |
| | 1st | Principle of electro deposition | | |
| | 2nd | Factors affecting the amount of electro deposition | | |
| | 3rd | Factors governing the electro deposition | | |
| | 4th | State simple example of extraction of metals | | |
| | 5th | Application of electrolysis | | |
| | 1st | Application of electrolysis | | |
| | 2nd | Advantages of electrical heating | | |
| | 3rd | Mode of heat transfer and Stephen's Law | | |
| | 4th | Principle of resistance heating. (Direct resistance and Indirect resistance heating) | | |
| | 5th | | | |

| WEEK | Class Day | Theory Topics |
|------|-----------|--|
| | 1st | Discuss working principle of Direct arc furnace and indirect arc furnace. |
| | 2nd | Principle of Induction Heating. working principle of Direct core type, vertical core type and indirect core. |
| | 3rd | Principle of Dielectric heating and its application. |
| | 4th | Principle of microwave heating and its application. |
| | 5th | |
| | 1st | Explain principle of arc welding. |
| | 2nd | |
| | 3rd | Discuss D.C. & A.C. arc phenomena. D.C. & A.C. arc welding plants of single and multi-operation type. |
| | 4th | Types of arc welding. |
| | 5th | |
| | 1st | Explain principles of resistance welding. |
| | 2nd | Descriptive study of different resistance welding methods. |
| | 3rd | Nature of radiation and its spectrum |
| | 4th | Terms used in illuminations. Lumen, luminous intensity, intensity of illumination. |
| | 5th | |

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| WEEK | Class Day | Theory Topics | | |
| | 1st | Explain the inverse square law and the cosine law. | | |
| | 2nd | Explain polar curves. | | |
| | 3rd | Describe light distribution and control. Explain related definitions like maintenance factor and depreciation factor. | | |
| | 4th | Design simple lighting schemes and depreciation factor. | | |
| | 5th | | | |
| | 1st | State basic idea about excitation in gas discharge lamps. | | |
| | 2nd | State constructional features and operation of fluorescent lamp. (CFL and PL lamps) | | |
| | 3rd | Sodium vapor lamps. | | |
| | 4th | High pressure mercury vapor lamps | | |
| | 5th | | | |
| | 1st | HEON sign lamps | | |
| | 2nd | High lumen output & low consumption fluorescent lamps. | | |
| | 3rd | State group and individual drive. | | |
| | 4th | Method of choice of electric drives. | | |
| | 5th | | | |

| WEEK | Class Day | Theory Topics |
|------|-----------|--|
| | 1st | explain starting and running characteristics of DC and AC motor. |
| | 2nd | State application of: DC motor & 3-phase induction motor. |
| | 3rd | Explain system of traction. |
| | 4th | system of track electrification. |
| | 5th | |
| | 1st | Running characteristics of DC And AC traction motor. |
| | 2nd | Explain control of motor. |
| | 3rd | tapped field control |
| | 4th | Rheostatic control |
| | 5th | |
| | 1st | series parallel control |
| | 2nd | multi-unit control |
| | 3rd | meta dyne control |
| | 4th | EXPLAIN Braking |
| | 5th | |

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| WEEK | Class Day | Theory Topics | | |
| | 1st | Regenerative Braking. | | |
| | 2nd | Braking with -1 Phase series motor. | | |
| | 3rd | magnetic Braking | | |
| | 4th | class test | | |
| | 5th | | | |
| | 1st | DISCUSSION OF ASSIGNMENT QUESTION | | |
| | 2nd | PREVIOUS SEMESTER QUESTION DISCUSSION | | |
| | 3rd | PREVIOUS SEMESTER QUESTION DISCUSSION | | |
| | 4th | OMR TEST | | |
| | 5th | | | |
| | 1st | CLASS TEST QUESTION DISCUSSION / DISTRIBUTION OF EVALUATED ANSWER SHEET TO THE STUDENT FOR THEIR REFERENCES | | |
| | 2nd | | | |
| | 3rd | | | |
| | 4th | | | |
| | 5th | | | |




| WEEK | Class Day | Theory Topics |
|------|-----------|---------------|
| | 1st | |
| | 2nd | |
| | 3rd | |
| | 4th | |
| | 5th | |
| | 1st | |
| | 2nd | |
| | 3rd | |
| | 4th | |
| | 5th | |
| | 1st | |
| | 2nd | |
| | 3rd | |
| | 4th | |
| | 5th | |