LESSION PLAN OF ELECTRICAL DEPARTMENT
INSTITUTE OF ENGINNERING & MANAGEMENT, JEYPORE(KORAPUT)

Subject:- UTILIZATION OF ELECTRICAL ENERGY AND TRACTION	Discipline - **Electrical Engg.**
Name of the Teaching Faculty:-**DEBASHISA PRAHARAJ**	Semester:- **5TH**
Semester From:- JULY To:- DECEMBER - No of Weeks:- **15**	No of Days/per Week Class Allotted :- **4**

Week	Class Day	Theory/ Practical Topics
1st	1st	**1. ELECTROLYTIC PROCESS** 1.1 Definition and Basic principle of Electro Deposition.
	2nd	1.2 Important terms regarding electrolysis. 1.3 Faradays Laws of Electrolysis.
	3rd	1.4 Definitions of current efficiency, Energy efficiency.
	4th	1.5 Principle of Electro Deposition.
2nd	1st	1.6 Factors affecting the amount of Electro Deposition.
	2nd	1.7 Factors governing the electro deposition.
	3rd	1.8 State simple example of extraction of metal
	4th	1.9 Application of Electrolysis
3rd	1st	**2. ELECTRICAL HEATING** 2.1. Advantages of electrical heating.
	2nd	2.2. Explain mode of heat transfer and Stephen's Law.
	3rd	2.3. Discuss principle of Resistance heating. 2.3.1 Direct Resistance heating. 2.3.2 Indirect Resistance heating
	4th	2.4. Explain working principle of direct arc furnace and indirect arc furnace
4th	1st	2.5. Principle of Induction heating.
	2nd	2.6. Working principle of direct core type, vertical core type and indirect core type Induction furnace
	3rd	2.7. Principle of coreless induction furnace and skin effect
	4th	2.8. Principle of dielectric heating and its application. 2.9. Principle of Microwave heating and its application
5th	1st	**3. PRINCIPLES OF ARC WELDING** 3.1 Explain principle of arc welding.
	2nd	3.2 Discuss D. C. & A. C. arc phenomena
	3rd	3.3 D.C. & A. C. arc welding plants of single and multi-operation type
	4th	3.3 D.C. & A. C. arc welding plants of single and multi-operation type (Contd..)
6th	1st	3.4 Types of arc welding
	2nd	3.5 Explain principles of resistance welding
	3rd	3.6 Descriptive study of different resistance welding methods
	4th	3.6 Descriptive study of different resistance welding method(Contd….)
7th	1st	**4. ILLUMINATION** 4 .1 Nature of Radiation and its spectrum
	2nd	4 .2 Terms used in Illuminations. i. Luminous intensity ii. Lumen iii. Intensity of illumination iv. MHCP v. MSCP vi. MHSCP vii. Brightness viii. Solid angle ix. Luminous efficiency
	3rd	4 .3 Explain the inverse square law and the cosine law. 4 .4 Explain polar curves.
	4th	4 .5 Describe light distribution and control. Explain related definitions like maintenance factor and depreciation factors

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8th	1st	4 .6 Design simple lighting schemes and depreciation factor. 4 .7 Constructional feature and working of Filament lamps, effect of variation of voltage on working of filament lamps.
	2nd	4 .8 Explain Discharge lamps
	3rd	4 .9 State Basic idea about excitation in gas discharge lamps.
	4th	4 . 10 State constructional factures and operation of: - Fluorescent lamp. (PL and PLL Lamps)
9th	1st	4 .11 Sodium vapor lamps
	2nd	4 .12 High pressure mercury vapour lamps.
	3rd	4 .13 Neon sign lamps.
	4th	4 .14 High lumen output & low consumption fluorescent lamps
10th	1st	**5. INDUSTRIAL DRIVES** 5 .1 State group and individual drive
	2nd	5 .2 Method of choice of electric drives.
	3rd	5 .2 Method of choice of electric drives.(Contd..)
	4th	5 .3 Explain starting and running characteristics of DC and AC motor.
11th	1st	5 .4 State Application of : 5.4.1 DC motor
	2nd	5.4.2 3 phase induction motor
	3rd	5.4.3 3 phase synchronous motors
	4th	5.4.3 3 phase synchronous motors.(Contd..)
12th	1st	5.4.4 Single phase induction, series motor, universal motor and repulsion motor
	2nd	5.4.4 Single phase induction, series motor, universal motor and repulsion motor(Contd..)
	3rd	**6. ELECTRIC TRACTION** 6. 1. Explain system of traction.
	4th	6. 2. System of Track electrification.
13th	1st	6. 2. System of Track electrification. (Contd..)
	2nd	6. 3. Running Characteristics of DC and AC traction motor.
	3rd	6. 4. Explain control of motor 6.4.1 Tapped field control
	4th	6.4.2 Rheostatic control
14th	1st	6.4.3 Series parallel control
	2nd	6.4.4 Metadyne control
	3rd	6. 5. Explain Braking of the following types.
	4th	6.5.1 Regenerative Braking
15th	1st	6.5.1 Regenerative Braking(Contd..)
	2nd	6.5.2 Braking with 1-phase series motor
	3rd	6.5.3 Magnetic Braking
	4th	6.5.3 Magnetic Braking(Contd..)