LESSON PLAN

SUB:-UTILIZATION OF ELECTRICAL ENERGY AND TRACTION.

DEPT. OF ELECT ENGG GOVT.POLY,BHADRAK ESTD-2017

BRANCH:- ELECTRICAL ENGG.

SEMESTER: 5TH

NAME OF FACULTY: - SUSHANTA KUMAR NAYAK

GOVERNMENT POLYTECHNIC, BHADRAK

SESSION:2024-25

Hod Electrical

HOD (ELECT.)
G.P.BHADRAK

Academic Co-ordinator

Academic Co-ordinator

Principal
Govt. Polytechnic Bhadrak

Principal
Govt.Polytechnic
Bhadrak

Discipline: ELECTRICAL ENGG.	Semester: 5th	Name of the Teaching Faculty : SUSHANTA KUMAR NAYAK
Subject: UTILIZATION OF ELECTRICAL ENERGY & TRACTION	No. of Days/per week class allotted:4	Semester from date: 01.07.2024 TO 08.11.2024 No. of Weeks:15
Week	**Class Day**	**Theory**
1st	1st	Definition and Basic principle of Electro Deposition
	2nd	Important terms regarding electrolysis.
	3rd	Faradays Laws of Electrolysis
	4th	Definitions of current efficiency, Energy efficiency
2nd	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
3rd	1st	Application of Electrolysis
	2nd	Advantages of electrical heating
	3rd	Mode of heat transfer
	4th	Stephen's Law
4th	1st	Principle of Resistance heating Direct resistance
	2nd	Principle of Resistance heating indirect resistance heating
	3rd	Discuss working principle of direct arc furnace
	4th	Discuss working principle of indirect arc furnace.
5th	1st	Principle of Induction heating.
	2nd	Working principle of direct core type, vertical core type and indirect core type Induction furnace.
	3rd	Principle of coreless induction furnace and skin effect.
	4th	Principle of dielectric heating and its application
6th	1st	Principle of Microwave heating and its application
	2nd	Explain principle of arc welding.
	3rd	Discuss D. C. & A. C. Arc phenomena.
	4th	D.C. & A. C. arc welding plants of single and multi-operation type
7th	1st	Types of arc welding
	2nd	Explain principles of resistance welding
	3rd	Descriptive study of different resistance welding methods.
	4th	Nature of Radiation and its spectrum
8th	1st	Terms used in Illuminations. [Lumen, Luminous intensity,

		Intensity of illumination,
	2nd	Terms used in Illuminations. MHCP, MSCP, MHSCP, Solid angle, Brightness, Luminous efficiency.
	3rd	Explain the inverse square law and the cosine law.
	4th	Explain polar curves.
9th	1st	Describe light distribution and control. Explain related definitions like maintenance factor and depreciation factors
	2nd	Design simple lighting schemes and depreciation factor
	3rd	Constructional feature and working of Filament lamps, effect of variation of voltage on working of filament lamps.
	4th	Explain Discharge lamps
10th	1st	State Basic idea about excitation in gas discharge lamps.
	2nd	State constructional factures and operation of Fluorescent lamp. (PL and PLL Lamps)
	3rd	Sodium vapor lamps
	4th	High pressure mercury vapor lamps
11th	1st	Neon sign lamps.
	2nd	High lumen output & low consumption fluorescent lamps
	3rd	State group and individual drive
	4th	Method of choice of electric drives
12th	1st	Explain starting and running characteristics of DC and AC motor.
	2nd	State Application of: DC motor. 3-phase induction motor
	3rd	State Application of:3 phase synchronous motors
	4th	State Application of: Single phase induction, series motor, universal motor and repulsion motor
13th	1st	Explain system of traction System of Track electrification
	2nd	Running Characteristics of DC and AC traction motor
	3rd	Explain control of motor: Tapped field control
	4th	Explain control of motor: Rheostatic control.
14th	1st	Explain control of motor: Series parallel control
	2nd	Explain control of motor: Multi-unit control .Metadyne control.
	3rd	Explain Braking of the following types:Regenerative Braking.
	4th	Explain Braking of the following types:Braking with 1-phase series motor
15th	1st	Explain Braking of the following types:Magnetic Braking.
	2nd	DOUBT CLEARING CLASS
	3rd	DOUBT CLEARING CLASS
	4th	PRIVIOUS YEAR QUEASTION DISCUSSION

SIGNATURE OF THE FACULTY

07-08-24

Lect. in Elect. Engg.
Govt. Poly. Bhadrak