

LESSON PLAN

**SUB:-UTILIZATION OF ELECTRICAL ENERGY AND
TRACTION.**



BRANCH:- ELECTRICAL ENGG.

SEMESTER: 5TH

NAME OF FACULTY: - SUSHANTA KUMAR NAYAK



**GOVERNMENT POLYTECHNIC,
BHADRAK**

SESSION:2024-25

Hod Electrical
HOD (ELECT.)
G.P.BHADRAK

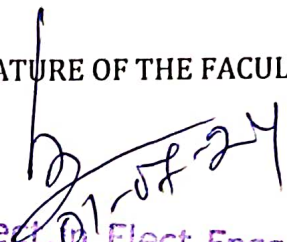
Academic Co-ordinator
Academic Co-ordinator

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

SIGNATURE OF THE FACULTY


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