

LESSON PLAN

SUB:-UTILIZATION OF ELECTRICAL ENERGY AND TRACTION.

BRANCH:- ELECTRICAL ENGG.

SEMESTER: 5TH

NAME OF FACULTY: - SUSHANTA KUMAR NAYAK



GOVERNMENT POLYTECHNIC,
BHADRAK

Hod Electrical

HOD (ELECT.)
G.P.BHADRAK

Academic Co-ordinator

Principal
Govt. Polytechnic Bhadrak
Principal
Govt. Polytechnic
Bhadrak

Discipline: ELECTRICAL ENGG.	Semester: 5 th	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: 01.08.2023 To Date: 30.11.2023 No. of Weeks:15
Week	Class Day	Theory
1 st	1 st	Definition and Basic principle of Electro Deposition
	2 nd	Important terms regarding electrolysis.
	3 rd	Faradays Laws of Electrolysis
	4 th	Definitions of current efficiency, Energy efficiency
2 nd	1 st	Principle of Electro Deposition.
	2 nd	Factors affecting the amount of Electro Deposition
	3 rd	Factors governing the electro deposition
	4 th	State simple example of extraction of metals
3 rd	1 st	Application of Electrolysis
	2 nd	Advantages of electrical heating
	3 rd	Mode of heat transfer
	4 th	Stephen's Law
4 th	1 st	Principle of Resistance heating Direct resistance
	2 nd	Principle of Resistance heating indirect resistance heating
	3 rd	Discuss working principle of direct arc furnace
	4 th	Discuss working principle of indirect arc furnace.
5 th	1 st	Principle of Induction heating.
	2 nd	Working principle of direct core type, vertical core type and indirect core type Induction furnace.
	3 rd	Principle of coreless induction furnace and skin effect.
	4 th	Principle of dielectric heating and its application
6 th	1 st	Principle of Microwave heating and its application
	2 nd	Explain principle of arc welding.
	3 rd	Discuss D. C. & A. C. Arc phenomena.
	4 th	D.C. & A. C. arc welding plants of single and multi-operation type
7 th	1 st	Types of arc welding
	2 nd	Explain principles of resistance welding
	3 rd	Descriptive study of different resistance welding methods.
	4 th	Nature of Radiation and its spectrum
8 th	1 st	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

23/07/23
Leet Ch. Ed.
J. P. Bhantrak