



LESSON PLAN

Discipline	Semester:-	Name of the Teaching Faculty:-
Electrical Engg.	5 th	AMIYA RANJAN DAS
Subject:- UTILIZATION OF ELECTRICAL ENERGY AND TRACTION (TH-4)	No of Days/per Week Class Allotted :- 04	Semester From:-14.07.2025 To:-15.11.2025 No of Weeks:-15
Week	ClassDay	Theory Topics
1 st	1 st	1.ELECTROLYTICPROCESS DefinitionandBasicprincipleofElectroDeposition.
	2 nd	Importanttermsregardingelectrolysis. Faradays Laws of Electrolysis.
	3 rd	1.4Definitionsofcurrentefficiency,Energyefficiency.
	4 th	1.5PrincipleofElectroDeposition.
2 nd	1 st	1.6FactorsaffectingtheamountofElectroDeposition.
	2 nd	1.7Factorsgoverningtheelectrodeposition.
	3 rd	1.8Statesimpleexampleofextractionofmetal
	4 th	1.9ApplicationofElectrolysis
3 rd	1 st	2.ELECTRICALHEATING Advantagesofelectricalheating.
	2 nd	2.2.ExplainmodeofheattransferandStephen'sLaw.
	3 rd	DiscussprincipleofResistanceheating. Direct Resistance heating. IndirectResistanceheating
	4 th	2.4.Explainworkingprincipleofdirectarcfurnaceandindirectarcfurnace
4 th	1 st	2.5.PrincipleofInductionheating.
	2 nd	2.6.Workingprincipleofdirectcoretype,verticalcoretypeandindirect Core type Induction furnace
	3 rd	2.7.Principleofcorelessinductionfurnaceandskineffect
	4 th	Principle of dielectric heating and its application. PrincipleofMicrowaveheatinganditsapplication
5 th	1 st	3.PRINCIPLES OFARCWELDING Explainprincipleofarcwelding.
	2 nd	3.2DiscussD.C.&A.C.arcphenomena
	3 rd	3.3D.C.&A.C.arcweldingplantsofsingleandmulti-operationtype
	4 th	3.3 D.C. & A.C.arcweldingplantsofsingleandmulti-operationtype (Contd..)
6 th	1 st	3.4Typesofarcwelding
	2 nd	3.5Explainprinciplesofresistancewelding
	3 rd	3.6Descriptivestudyofdifferentresistanceweldingmethods
	4 th	3.6Descriptivestudyofdifferentresistanceweldingmethod(Contd....)
7 th	1 st	4. ILLUMINATION 4.1 NatureofRadiationanditsspectrum
	2 nd	4.2TermsusedinIlluminations. i.Luminousintensityii.Lumeniii.Intensityofilluminationiv.MHCP v.MSCPvi.MHSCPvii.Brightnessviii.Solidangleix.Luminous efficiency
	3 rd	4.3Explaintheinversesquarelawandthe cosine law.4 .4 Explain polar curves.
	4 th	4 .5Describelight distributionandcontrol. Explainrelated definitionslikemaintenancefactoranddepreciationfactors.
8 th	1 st	4.6Designsimplelightingschemesanddepreciationfactor. 4.7ConstructionalfeatureandworkingofFilamentlamps, effectofvariationof voltage on working of filament lamps.
	2 nd	4.8ExplainDischargelamps

9 th	3 rd	4.9 State Basic idea about excitation in gas discharge lamps.
	4 th	4.10 State constructional features and operation of: -Fluorescent lamp. (PL and PLL Lamps)
	1 st	4.11 Sodium vapor lamps
	2 nd	4.12 High pressure mercury vapour lamps.
10 th	3 rd	4.13 Neon sign lamps.
	4 th	4.14 High lumen output & low consumption fluorescent lamps
	1 st	5. INDUSTRIAL DRIVES 5.1 State group and individual drive
	2 nd	5.2 Method of choice of electric drives.
11 th	3 rd	5.2 Method of choice of electric drives. (Contd..)
	4 th	5.3 Explain starting and running characteristics of DC and AC motor.
	1 st	5.4 State Application of: 5.4.1 DC motor
	2 nd	5.4.2 3 phase induction motor
12 th	3 rd	5.4.3 3 phase synchronous motors
	4 th	5.4.3 3 phase synchronous motors. (Contd..)
	1 st	5.4.4 Single phase induction, series motor, universal motor and repulsion motor
	2 nd	5.4.4 Single phase induction, series motor, universal motor and repulsion motor (Contd..)
13 th	3 rd	6. ELECTRIC TRACTION 6.1. Explain system of traction.
	4 th	6.2. System of Track electrification.
	1 st	6.2. System of Track electrification. (Contd..)
	2 nd	6.3. Running Characteristics of DC and AC traction motor.
14 th	3 rd	6.4. Explain control of motor 6.4.1 Tapped field control
	4 th	6.4.2 Rheostatic control
	1 st	6.4.3 Series parallel control
	2 nd	6.4.4 Metadyne control
15 th	3 rd	6.5. Explain Braking of the following types.
	4 th	6.5.1 Regenerative Braking
	1 st	6.5.1 Regenerative Braking (Contd..)
	2 nd	6.5.2 Braking with 1-phase series motor
15 th	3 rd	6.5.3 Magnetic Braking
	4 th	6.5.3 Magnetic Braking (Contd..)

10/07/25
Sign of faculty

10/07/25
HOD of ETC (MOD)
Sign of Sr. Lect
Electrical & ETC Engg
G. E. T (POLY), ...

10/07/25
Sign of principal