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DEPARTMENT OF ELECTRICAL ENGINEERING

Govt. Polytechnic, Balasore

LESSON PLAN FOR ACADEMIC SESSION - 2025-26

UTILILISATION OF ELECTRICAL ENERGY AND TRACTION

Course Code : Th-4	**Semester :5TH**
Total Periods : 60 Hrs	**Examination : 3 Hours**
Theory Periods : 4P/Week	**Progressive Assessment : 20 Marks**
End Semester Examination : 80 Marks	
Maximum Marks : 100	
Semester From Date : 14/07/2025 To Date :	
Name of Teaching Faculty: Er. Anita Shial	

1st	1st	**Ch-1 Electrolytic process**
	2nd	Definition and basic principle of electro deposition
	3rd	Important terms regarding electrolysis
	4th	Faraday's law of electrolysis
2nd	1st	current efficiency, energy efficiency
	2nd	Principle of electro deposition, and factors affecting the amount of electro deposition
	3rd	Factors governing the electro deposition
	4th	Simple example related to extraction of metals, Application of electrolysis
3rd	1st	**Ch-2 Electrical heating** Advantage of electrical heating
	2nd	Mode of heat transfer and stephen's law
	3rd	Principle of resistance heating(direct , indirect)
	4th	working principle of direct Arc furnace and indirect arc furnace
4th	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 application Principle of Microwave heating and its application
	1st	**Ch-3 Principles of Arc Welding** explain principle of arc welding
	2nd	D.C and A.C arc phenomena
	3rd	D.C and A.C arc welding plants of single type
	4th	D.C and A.C arc welding plants of Multi operation type
6th	1st	Types of arc welding
	2nd	Principle of resistance welding
	3rd	Descriptive study of different resistance welding methods
	4th	study of different resistance welding methods
7th	1st	**Ch-4 illumination**, nature of radiation and its spectrum
	2nd	Luminous intensity, lumen , intensity of illumination, MHCP,MSCP, MHSCP, brightness, solid angle Luminous efficiency
	3rd	Inverse square law and the cosine law Polar curves
	4th	Polar curves
8th	1st	Describe light distribution and control panel
	2nd	maintenance factor and depreciation factor, simple lighting schemes and lighting factor
	3rd	Constructional feature and working of filament lamps, effect of variation of voltage on working of filament lamps
	4th	Discharge lamps
9th	1st	Constructional features and operation of fluorescent lamp
	2nd	Sodium vapour lamp, high pressure mercury vapour lamps
	3rd	Neon sign lamp
	4th	High lumen output & low consumption fluorescent lamp
10th	1st	**Ch-5 industrial drive**
	2nd	group and individual drive
	3rd	Methods of choice of electric drive
	4th	Starting and running characteristics of DC and AC motor
11th	1st	Application of DC motor,3-ph induction motor
	2nd	Application of 3-ph synchronous motor
	3rd	Application 1-ph induction motor
	4th	Application 1-ph series motor
12th	1st	Application universal motor

	2nd	Application repulsion motor
	3rd	**Ch.6 Electric Traction** System of traction
	4th	System of tracking electrification
13th	1st	Running characteristics of DC traction motor
	2nd	Running characteristics of AC traction motor
	3rd	Explain Control of motor
	4th	Tapped field control
14th	1st	Rheostatic control
	2nd	Series parallel control
	3rd	Multi-unit ,Metaldyne control
	4th	Braking
15th	1st	Regenerative braking
	2nd	Braking with 1-ph series motor
	3rd	Magnetic braking
	4th	Numerical practice

14/07/25

Lect. , Elect Dept.
G.P, BLS
Teaching Faculty

14/7/25

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14/7/25

Academic Coordinator
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Principal
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