

Lesson Plan of Utilization Of Electrical Energy And Traction


Discipline:- Electrical	Semester:- 5th	Name Of The Teaching Faculty:- Sourabh S. Nanda
Subject:- Utilization Of Electrical Energy And Traction	No Of Days Per week Class Allotted:-4	No Of Weeks:-15 DATE-01-07-2024 to 16-12-2024
No. of week	No. of class	Topic to be taught
1 st	1	ELECTROLYTIC PROCESS: Definition and Basic principle of Electro Deposition.
	2	Important terms regarding electrolysis. Faradays Laws of Electrolysis.
	3	Definitions of current efficiency, Energy efficiency.
	4	Principle of Electro Deposition. Factors affecting the amount of Electro Deposition
2 nd	5	Factors governing the electro deposition. State simple example of extraction of metals.
	6	Application of Electrolysis
	7	ELECTRICAL HEATING: Advantages of electrical heating.
	8	Mode of heat transfer and Stephen's Law.
3 rd	9	Principle of Resistance heating. (Direct resistance and indirect resistance heating.)
	10	Discuss working principle of direct arc furnace and indirect arc furnace.
	11	Principle of Induction heating. Working principle of direct core type, vertical core type and indirect core type Induction furnace.
	12	Principle of core less induction furnace and skin effect.
4 th	13	Principle of dielectric heating and its application. Principle of Microwave heating and its application.
	14	PRINCIPLES OF ARC WELDING: Explain principle of arc welding.
	15	Discuss D. C. & A. C. Arc phenomena.
	16	D.C. & A. C. arc welding plants of single and multi-operation type.
5 th	17	Types of arc welding. Explain principles of resistance welding.
	18	Descriptive study of different resistance welding methods.
	19	ILLUMINATION: Nature of Radiation and its spectrum.
	20	Terms used in Illuminations. [Lumen, Luminous intensity,

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		Intensity of illumination, MHCP, MSCP, MHSCP, Solid angle, Brightness, Luminous efficiency.]
6 th	21	Explain the inverse square law and the cosine law.
	22	Explain polar curves.
	23	Describe light distribution and control. Explain related definitions like maintenance factor and depreciation factors.
	24	Design simple lighting schemes and depreciation factor.
7 th	25	Constructional feature and working of Filament lamps, effect of variation of voltage on working of filament lamps.
	26	Explain Discharge lamps.
	27	State Basic idea about excitation in gas discharge lamps.
	28	State constructional features and operation of Fluorescent lamp.
8 th	29	Sodium vapor lamps.
	30	High pressure mercury vapor lamps.
	31	Neon sign lamps.
	32	High lumen output & low consumption fluorescent lamps.
9 th	33	INDUSTRIAL DRIVES: State group and individual drive.
	34	Method of choice of electric drives
	35	Explain starting and running characteristics of DC and AC motor.
	36	State Application of DC motor.
10 th	37	3-phase induction motor.
	38	3 phase synchronous motors.
	39	Single phase induction, series motor, universal motor and repulsion motor.
	40	ELECTRIC TRACTION: Explain system of traction.
11 th	41	System of Track electrification.
	42	Running Characteristics of DC and AC traction motor.
	43	Explain control of motor:
	44	Tapped field control.
12 th	45	Rheostatic control.
	46	Series parallel control.
	47	Multi-unit control.
	48	Explain Braking of the following types:
13 th	49	Regenerative Braking.
	50	Braking with 1-phase series motor.
	51	Magnetic Braking.
	52	Revision
	53	Revision

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14 th	54	Revision
	55	Revision
	56	Class Test
15 th	57	Class Test
	58	Class Test
	59	Class Test
	60	Class Test


Teaching faculty


H.O.D (Elect. Dept.)