

Discipline: Electrical Engineering	Semester: 5th Semester 2022-Winter	Name of the Teaching Faculty: Shri Deepak Patra, Lect. Electrical Engg
Subject: Utilization of Electrical Energy and Traction(UJET)	No. of Days/week Class Allotted:60	Semester from date: 15/09/2022 to date: 22/12/2022 No of weeks: 15
Class no	Class Date	Theory Topics
1	15.09.2022	ELECTROLYTIC PROCESS: Definition and Basic principle of Electro Deposition.
2	16.09.2022	Important terms regarding electrolysis.
3	19.09.2022	Faradays Laws of Electrolysis.
4	20.09.2022	Definitions of current efficiency, Energy efficiency. Principle of Electro Deposition.
5	22.09.2022 (9.00 AM – 9.50 AM)	Factors affecting the amount of Electro Deposition.
6	23.09.2022	Factors governing the electro deposition.
7	23.09.2022	State simple example of extraction of metals.
8	26.09.2022	Application of Electrolysis.
9	27.09.2022	ELECTRICAL HEATING: Advantages of electrical heating. Mode of heat transfer and Stephen's Law.
10	29.09.2022 (9.00 AM – 9.50 AM)	Principle of Resistance heating. (Direct resistance and indirect resistance heating.)
11	29.09.2022	Discuss working principle of direct arc furnace and indirect arc furnace.
12	30.09.2022	Working principle of direct core type, vertical core type and indirect core type Induction furnace.
13	10.10.2022	Principle of coreless induction furnace and skin effect.
14	11.10.2022	Principle of dielectric heating and its application.
15	13.10.2022	Principle of Microwave heating and its application.
16	14.10.2022 (9.00 AM – 9.50 AM)	PRINCIPLES OF ARC WELDING: Explain principle of arc welding.
17	14.10.2022	Discuss D. C. & A. C. Arc phenomena.
18	17.10.2022	D.C. & A. C. arc welding plants of single and multi-operation type
19	18.10.2022	Types of arc welding.
20	20.10.2022	Explain principles of resistance welding.
21	21.10.2022 (9.00 AM – 9.50 AM)	Descriptive study of different resistance welding methods.
22	21.10.2022	ILLUMINATION: Nature of Radiation and its spectrum.
23	25.10.2022	Terms used in Illuminations. [Lumen, Luminous intensity, Intensity of illumination, MHCP, MSCP, MHSCP, Solid angle, Brightness, Luminous efficiency.]

24	27.10.2022	Explain the inverse square law and the cosine law.
25	28.10.2022	Explain polar curves. Describe light distribution and control. Explain related definitions like maintenance factor and depreciation factors.
26	31.10.2022 (9.00 AM – 9.50 AM)	Design simple lighting schemes and depreciation factor.
27	31.10.2022	Constructional feature and working of Filament lamps
28	13.10.2022	Effect of variation of voltage on working of filament lamps.
29	01.11.2022	Explain Discharge lamps.
30	03.11.2022	State Basic idea about excitation in gas discharge lamps.
31	04.11.2022 (9.00 AM – 9.50 AM)	State constructional features and operation of Fluorescent lamp. (PL and PLL Lamps)
32	04.11.2022	Sodium vapor lamps. High pressure mercury vapor lamps.
33	07.11.2022	Neon sign lamps. High lumen output & low consumption fluorescent lamps.
34	10.11.2022	INDUSTRIAL DRIVES: State group and individual drive.
35	11.11.2022	Method of choice of electric drives.
36	14.11.2022	Explain starting and running characteristics of DC and AC motor.
37	15.11.2022 (9.00 AM – 9.50 AM)	
38	15.11.2022	State Application of: DC motor
39	17.11.2022	State Application of 3-phase induction motor.
40	18.11.2022	State Application of 3 phase synchronous motors.
41	21.11.2022	State Application of Single phase induction, series motor, universal motor and repulsion motor.
42	22.11.2022	ELECTRIC TRACTION: Explain system of traction.
43	24.11.2022	System of Track electrification.
44	25.11.2022	Running Characteristics of DC and AC traction motor.
45	28.11.2022	
46	29.11.2022	Tapped field control. Rheostatic control.
47	01.12.2022	Series parallel control. Multi-unit control.
48	02.12.2022	Metadyne control.
49	05.12.2022	Regenerative Braking.
50	06.12.2022 (9.00 AM – 9.50 AM)	Braking with 1-phase series motor.

51	06.12.2022	Magnetic Braking
52	08.12.2022	Revision of Chapter-1
53	09.12.2022	Revision of Chapter-2
54	12.12.2022	Revision of Chapter-3
55	13.12.2022	Revision of Chapter-4
56	15.12.2022	Revision of Chapter-5
57	16.12.2022	Revision of Chapter-6
58	19.12.2022	Discussion of probable questions and answers-1
59	20.12.2022	Discussion of probable questions and answers-2
60	22.12.2022	Discussion of probable questions and answers-3

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