

LESSON PLAN

Name of Teacher: Vivek Sheel Verma

Branch: Electrical Engg.

Name of subject: Utilization of Electrical energy

Semester: 6th

Week	Chapters Covered	Topic Covered	Conclusion	Reference
1st	1	Electric Drives Advantages of Electric Drives, Characteristics of different mechanical loads, Types of Motors used as electric drive, Electric braking, Plugging, Rheostatic braking, Regenerative braking	Students will learn about the basics of electric drive	Utilization of Electrical Energy by J.B. Gupta, Kataria Publications, Ludhiana
2nd	1	Methods of power transfer by direct coupling by using devices like belt drive, gears, chain drives. Selection of motors for different types of domestic loads Selection of drive for applications such as general workshop, textile mill, paper mill, steel mill, printing press, cranes and lift. Applications of flywheel.	Students will learn about the selection of drives for various applications	Utilization of Electrical Energy by J.B. Gupta, Kataria Publications, Ludhiana
3rd	2	Illumination Nature of light, visibility spectrum curve of relative sensitivity of human eye and wave length of light Definition: Luminous flux, solid angle, luminous intensity, illumination, luminous efficiency, depreciation factor, coefficient of utilization, space to height ratio, reflection factor, glare, shadow, lux level.	Students will have the knowledge about the illumination systems.	Utilization of Electrical Energy by Sahdev, Unique International Publication, Jalandhar
4th	2	Laws of Illumination Different type of lamps, construction and working of incandescent and discharge lamps– their characteristics, fittings required for filament lamp, mercury vapor, sodium lamp, fluorescent lamp, halogen lamp, neon lamp, Compact fluorescent lamp, LED lamps.	Students will learn the construction of various illuminaries	Utilization of Electrical Energy by Sahdev, Unique International Publication, Jalandhar
5th	2	Main requirements of proper lighting; absence of glare, contrast and shadow Illumination requirement for street lighting, flood lighting, monument lighting and decorative lighting. LED based lighting systems, advantages of LED based lighting	Students will learn about the illumination system requirements.	Utilization of Electrical Energy by Sahdev, Unique International Publication, Jalandhar

6th	3	Electric Heating Advantages of Electrical Heating Electrical Heating Methods: Resistance heating – direct and indirect resistance heating, electric ovens, their temperature range, properties of resistance heating elements, thermostat control circuit Induction Heating: Principle of core type and coreless induction furnace, their construction and applications	Students will learn the basics of electric heating and different types of electric heating	Utilization of Electrical Energy by J.B. Gupta, Kataria Publications, Ludhiana
7th	3	Electric Arc Heating: direct and indirect arc heating, construction, working and applications of arc furnace. Dielectric heating: working principle and applications in industrial fields Infra-red heating and its applications Microwave heating and its applications	Students will learn the basics of electric heating and different types of electric heating	Utilization of Electrical Energy by J.B. Gupta, Kataria Publications, Ludhiana
8th	4	Electric Welding Advantages of Electric Welding Welding methods Principles of resistance welding, types – spot, projection, seam and butt welding, welding equipment	Students will learn the basics of electric welding and its various types	Utilization of Electrical Energy by Sahdev, Unique International Publication, Jalandhar
9th	4	Principle of arc production, electric arc welding, characteristics of arc; carbon arc, metal arc, hydrogen arc welding method and their applications. Power supply requirement. Advantages of using coated electrodes, comparison between AC and DC arc welding, welding control circuits, welding of aluminum and copper materials	Students will learn the basics of electric welding and its various types	Utilization of Electrical Energy by Sahdev, Unique International Publication, Jalandhar
10th	5	Electrolytic Processes Need of Electro-deposition Laws of Electrolysis, process of electro-deposition - clearing, operation, deposition of metals, polishing and buffing Equipment and accessories for electroplating Factors affecting electro-deposition Electroplating of non-conducting materials	Students will learn various electrolytic processes	Utilization of Electrical Energy by Sahdev, Unique International Publication, Jalandhar
11th	6	Electrical Circuits used in Refrigeration , Air Conditioning and Water Coolers Principle of air conditioning, vapor pressure, refrigeration cycle, eco-friendly refrigerants	Students will learn the electric circuits used in Refrigerators Water coolers etc.	Utilization of Electrical Energy by Sahdev, Unique International Publication, Jalandhar

12th	6	Description and Working of Electrical circuits used in Refrigerator, Air-conditioner Water cooler	Students will learn the working of refrigerators and Air Conditioners	Utilization of Electrical Energy by Sahdev, Unique International Publication, Jalandhar
13th	7	Electric Traction Requirements of ideal Traction System, Different systems of electric traction, DC and AC systems, diesel electric system, types of services – urban, sub-urban, and main line and their speed-time curves, Advantages of Electric Traction Different accessories for track electrification; such as overhead catenary wire, conductor rail system, current collector-pantograph	Students will learn about the various concepts of electric traction and various accessories associated with electric traction.	Modern Electric Traction by H Partap, Dhanpat Rai & Sons, Delhi
14th	7	Electrical block diagram of an Electric Locomotive with description of various equipment and accessories used., Types of motors used for electric traction Starting and braking of electric locomotives Introduction to EMU (Electrical Multiple Unit) and Metro Railway Modern Electrical Traction systems, their features and advantages	Students will learn about block diagram of electric traction and EMU	Modern Electric Traction by H Partap, Dhanpat Rai & Sons, Delhi

Prepared By

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Head of Department

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(OIC EE)