Lesson Plan

Name of Faculty: ARVINDER SINGH
Discipline: ELCTRICAL ENGG. (G.P.SIRSA)
Semester: 5th
Subject : UTILISATION OF ELECTRICAL ENERGY
Lesson Plan Duration : 15 Weeks

Week	Lecture Day	Topic
1st	1	**Introduction of Chapter-1- ELECTRIC HEATING and Advantages of electrical heating and Heating Methods**
	2	Resistance heating – direct and indirect resistance heating, electric ovens, their temperature range
	3	properties of resistance heating elements, domestic water heaters and other heating appliances, thermostat control circuit
	4	Induction heating; principle of core type and coreless induction furnace, their construction and applications
2nd	1	Electric arc heating; direct and indirect arc heating, construction, working.
	2	Applications of arc furnace
	3	Dielectric heating, applications in various industrial fields
	4	Infra-red heating and its applications
3rd	1	Microwave heating and solar heating and their applications
	2	Calculation of resistance heating elements
	3	**Introduction of Chapter-2- Electric Welding and Advantages of electric welding and welding methods**
	4	Resistance welding- spot, projection, seam and butt welding and welding equipment.
4th	1	Electric arc welding, carbon arc welding and their characteristics
	2	Metal and hydrogen arc welding,
	3	Power supply requirement. Advantages of using coated electrods
	4	comparison between AC and DC arc welding, welding control circuits,welding of aluminum and copper
5th	1	**Introduction of Chapter-3- Electrolytic Processes and Need of electro-deposition**
	2	Laws of electrolysis
	3	process of electro-deposition - clearing, operation, deposition of metals, polishing and buffing
	4	Equipment and accessories for electroplating
6th	1	Factors affecting electro-deposition
	2	Principle of galvanizing and its applications
	3	Principles of anodizing and its applications
	4	Electroplating of non-conducting materials
7th	1	Manufacture of chemicals by electrolytic process
	2	Power supplies for electroplating
	3	**Introduction of Chapter-4- Electrical Circuits used in Refrigeration, Air Conditioning and Water Coolers:**
	4	Principle of air conditioning, vapour pressure cycle
	1	refrigeration cycle,

8th	**2**	eco-friendly refrigerants
	3	Electrical circuit for refrigerator
	4	Electrical circuit for A.C- window type
9th	**1**	Construction and principle of split type AC
	2	Types of water cooler
	3	Storage type water cooler
	4	Electrical circuit for water cooler
10th	**1**	Characteristics of good coolant
	2	**Introduction of Chapter-5- Electric Drives:**
	3	Definition of drive
	4	Advantages of electric drives
11th	**1**	Characteristics of different mechanical loads
	2	Types of motors used as electric drive
	3	methods of power transfer by direct coupling by using devices like belt drive, gears, chain drives etc.
	4	selection of motors for different types of domestic loads
12th	**1**	Selection of drive for applications such as general workshop, textile mill,
	2	paper mill, steel mill, printing press, crane and lift etc.
	3	Application of flywheel.
	4	Selection of motors for Domestic Appliances
13th	**1**	**Introduction of Chapter-6- Electric Traction:**
	2	Advantages of electric traction over other types of traction
	3	Different systems of electric traction, DC and AC systems
	4	diesel electric system, types of services
14th	**1**	urban, sub-urban, and main line and their speed-time curves
	2	Different accessories for track electrification; such as overhead catenary wire
	3	conductor rail system, current collector-pentagraph
	4	Scheduled speed and Factors affecting scheduled speed
15th	**1**	Block diagram of locomotive
	2	Types of motors used for electric traction
	3	Power supply arrangements, Starting and braking of electric locomotives
	4	Introduction to EMU and metro railways, Train Lighting Scheme