

# UTILIZATION OF ELECTRICAL ENERGY

## **UNIT – I:**

### **Selection of Motors**

Choice of motor, type of electric drives, starting and running characteristics– Speed control– Temperature rise–Applications of electric drives–Types of industrial loads–continuous– Intermittent and variable loads–Load equalization.

## **UNIT – II:**

### **Electric Heating**

Advantages and methods of electric heating–Resistance heating induction heating and dielectric heating.

### **Electric Welding**

Electric welding–Resistance and arc welding–Electric welding equipment– Comparison between AC and DC Welding

## **UNIT – III:**

### **Illumination fundamentals**

Introduction, terms used in illumination–Laws of illumination–Polar curves– Integrating sphere– Lux meter–Sources of light

## **UNIT – IV:**

### **Various Illumination Methods**

Discharge lamps, MV and SV lamps – Comparison between tungsten filament lamps and fluorescent tubes–Basic principles of light control– Types and design of lighting and flood lighting–LED lighting.

## **UNIT – V:**

### **Electric Traction – I**

System of electric traction and track electrification– Review of existing\ electric traction systems in India– Special features of traction motor– Mechanics of train movement–Speed–time curves for different services – Trapezoidal and quadrilateral speed time curves.

## **UNIT – VI:**

### **Electric Traction – II**

Calculations of tractive effort– power –Specific energy consumption for given run–Effect of varying acceleration and braking retardation–Adhesive weight and braking retardation adhesive weight and coefficient of adhesion– Principles of energy efficient motors.