

LESSON PLAN FOR ELECTRICAL ENGINEERING MATERIAL [Th4]

Discipline: Electrical Engineering	Semester: 3rd	Name of the Teaching Faculty: CHANDRAMANI MAHAPATRA (Lect.)
Subject: ELECTRICAL ENGINEERING MATERIAL	Numbers of classes per week: 4	Semester from date: 01/09/2020 to date: 31/12/2020 No. of weeks: 15
week	Class day	Theory
1st	1st	1. Conducting Materials: 1. 1 Introduction
	2nd	1. 2 Resistivity, factors affecting resistivity.
	3rd	1. 2 Resistivity, factors affecting resistivity. (contd.)
	4th	1. 3 Classification of conducting materials into low-resistivity
2nd	1st	1. 3 Classification of conducting materials into high resistivity materials
	2nd	1. 4 Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)
	3rd	1. 4 Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel) (contd.)
	4th	1. 5 Stranded conductors
3rd	1st	1. 6 Bundled conductors
	2nd	1. 7 Low resistivity copper alloys
	3rd	1. 8 High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)
	4th	1. 8 High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)(contd.)
4th	1st	1. 9 Superconductivity
	2nd	1. 10 Superconducting materials
	3rd	1. 11 Application of superconductor materials
	4th	2. Semiconducting Materials: 2. 1 Introduction 2. 2 Semiconductors
5th	1st	2. 3 Electron Energy and Energy Band Theory
	2nd	2. 4 Excitation of Atoms 2. 5 Insulators, Semiconductors and Conductors
	3rd	2. 6 Semiconductor Materials
	4th	2. 7 Covalent Bonds 2. 8 Intrinsic Semiconductors
6th	1st	2. 9 Extrinsic Semiconductors
	2nd	2. 10 N-Type Materials 2. 11 P-Type Materials 2. 12 Minority and Majority Carriers
	3rd	2. 13 Semi-Conductor Materials
	4th	2. 14 Applications of Semiconductor materials

		2.14.1 Rectifiers
7th	1st	2.14.2 Temperature-sensitive resistors or thermistors 2.14.3 Photoconductive cells 2.14.4 Photovoltaic cells
	2nd	2.14.5 Varistors 2.14.6 Transistors 2.14.7 Hall effect generators 2.14.8 Solar power
	3rd	3. Insulating Materials: 3. 1 Introduction
	4th	3. 2 General properties of Insulating Materials 3.2.1 Electrical properties
8th	1st	3.2.2 Visual properties 3.2.3 Mechanical properties
	2nd	3.2.4 Thermal properties 3.2.5 Chemical properties 3.2.6 Ageing
	3rd	3.3 Insulating Materials – Classification, properties, applications 3.3.1 Introduction
	4th	3.3.2 Classification of insulating materials on the basis physical and chemical structure
9th	1st	3.3.2 Classification of insulating materials on the basis physical and chemical structure(contd.)
	2nd	3.4 Insulating Gases 3.4.1 Introduction
	3rd	3.4.2 Commonly used insulating gases
	4th	4. Dielectric Materials: 4.1 Introduction
10th	1st	4.2 Dielectric Constant of Permittivity
	2nd	4.3 Polarization
	3rd	4.4 Dielectric Loss
	4th	4.5 Electric Conductivity of Dielectrics and their Break Down
11th	1st	4.6 Properties of Dielectrics.
	2nd	4.7 Applications of Dielectrics.
	3rd	5. Magnetic Materials: 5.1 Introduction
	4th	5.2 Classification 5.2.1 Diamagnetism 5.2.2 Para magnetism 5.2.3 Ferromagnetism
12th	1st	5.3 Magnetization Curve
	2nd	5.4 Hysteresis
	3rd	5.4 Hysteresis(contd.)
	4th	5.5 Eddy Currents
13th	1st	5.6 Curie Point 5.7 Magneto-striction

	2nd	5.8 Soft magnetic Materials
	3rd	5.8.2 Hard magnetic materials
	4th	6. Materials for Special Purposes 6.1 Introduction
14th	1st	6.2 Structural Materials
	2nd	6.3 Protective Materials 6.3.1 Lead, Steel tapes.
	3rd	6.3.2 wires and strips
	4th	6.4 Other Materials 6.4.1 Thermocouple materials
15th	1st	6.4.2 Bimetals
	2nd	6.4.3 Soldering Materials
	3rd	6.4.4 Fuse and Fuse materials.
	4th	6.4.5 Dehydrating material.