Th.4 Electrical Engineering Material

Name of the Course: Diploma in Electrical Engineering			
Faculty: Mr Ruhia Hansda			
Course code:	Th.4	**Semester W.E.F. 01/10/2021**	3rd
Total Period:	60 Periods	**Examination:**	3 Hrs
Theory periods:	4P / Week	**Internal Assessment:**	20
Tutorial:	-	**End Semester Examination:**	80
Maximum marks:	100		

VISION:

To create competent & industry ready Electrical Diploma Engineers with professional and social values to meet future challenges.

MISSION:

- To prepare diploma holders through "qualitative competency based education system" to compete with national requirement along with core values.
- To produce dynamic Electrical Engineers to serve the society and industry.
- To develop leadership qualities, communication skills, critical thinking and attitude for lifelong learning.

PROGRAM EDUCATIONAL OBJECTIVES:

PEO1	Apply technical knowledge and skills learned in the field of Electrical Engineering to excel in Professional and/or higher education.
PEO2	To provide students an excellent academic environment and make them aware the needs of Society and Industry to become a successful Professional/Entrepreneur.
PEO3	To engage in lifelong learning, career enhancement to adopt emerging technologies

Course outcomes:-

Co1	Identify and study about different electrical materials.
Co2	Analyze the properties of conductors, semiconductors and insulating materials.
Co3	Understand the concept of dielectric and magnetic material and their properties.
Co4	Gain knowledge about the application of various electrical materials in different areas.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl. No.	Topics	Periods
1.	Conducting materials	16
2.	Semiconducting materials	10
3.	Insulating materials	09
4.	Dielectric materials	08
5.	Magnetic materials	08
6.	Material for special purposes	09
Total		**60**

GOVERNMENT POLYTECHNIC KORAPUT
DEPARTMENT OF ELECTRICAL ENGINEERING

LESSON PLAN

Week	Day	Theory topic
1st	1st	**Conducting materials(16)** Introduction, Resistivity, factors affecting resistivity
	2nd	Classification of conducting materials into low-resistivity and high resistivity materials
	3rd	Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)
	4th	Stranded conductors
2nd	1st	Bundled conductors ,
	2nd	Bundled conductors ,
	3rd	Low resistivity copper alloys
	4th	Low resistivity copper alloys
3rd	1st	High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)
	2nd	High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)
	3rd	High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)
	4th	Superconductivity
4th	1st	Superconducting materials
	2nd	Superconducting material
	3rd	Application of superconductor materials
	4th	Application of superconductor materials
5th	1st	**2. Semiconducting Materials(10),**Introduction,Semiconductors
	2nd	Electron Energy and Energy Band Theory , Excitation of Atoms
	3rd	Insulators, Semiconductors and Conductors
	4th	Semiconductor Materials Covalent Bonds
6th	1st	Intrinsic Semiconductors ,Extrinsic Semiconductors
	2nd	N-Type Materials,P-Type Materials
	3rd	Minority and Majority Carriers. 13 Semi-Conductor Materials
	4th	Applications of Semiconductor materials, Rectifiers
7th	1st	Temperature-sensitive resisters or thermistors, Photoconductive cells
	2nd	Photovoltaic cells, Varisters, Transistors, Hall effect generators, Solar power
	3rd	**3.Insulating materials(9)**: Introduction, General properties of Insulating Materials
	4th	Electrical properties,Visual properties,Mechanical properties,Thermal properties Chemical properties, geing
8th	1st	Insulating Materials – Classification, properties, applications
	2nd	Insulating Materials – Classification, properties, applications
	3rd	Insulating Materials – Classification, properties, applications
	4th	Insulating Materials – Classification, properties, applications
9th	1st	Insulating Materials – Classification, properties, applications
	2nd	Insulating Gases,Introduction.
	3rd	Commonly used insulating gases
	4th	**4. Dielectric Materials(8):** Introduction
10th	1st	Dielectric Constant of Permittivity
	2nd	Polarization
	3rd	Dielectric Loss
	4th	Electric Conductivity of Dielectrics and their Break Down
11th	1st	Electric Conductivity of Dielectrics and their Break Down
	2nd	Properties of Dielectrics
	3rd	Applications of Dielectrics.
	4th	**5. Magnetic Materials:Introduction(08) Classification**

12th	1st	Diamagnetism , Para magnetism, Ferromagnetism
	2nd	Magnetization Curve
	3rd	Hysteresis
	4th	Eddy Currents
13th	1st	Curie Point , Magneto-striction
	2nd	Soft and Hard magnetic Materials, Soft magnetic materials
	3rd	Hard magnetic materials
	4th	**6. Materials for Special Purposes:(9):** Introduction 6.2 Structural Materials
14th	1st	Protective Materials 6.3.1 Lead
	2nd	Steel tapes, wires and strips
	3rd	Other Materials
	4th	Thermocouple materials
15th	1st	Bimetals
	2nd	Soldering Materials
	3rd	Fuse and Fuse materials
	4th	Dehydrating material.

Signature of faculty concerned

01/10/2021
H.O.D. Electrical