



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	3 rd
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

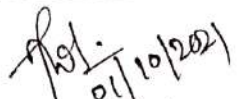
Week	Day	Theory topic
1 st	1 st	Conducting materials(16) Introduction, Resistivity, factors affecting resistivity
	2 nd	Classification of conducting materials into low-resistivity and high resistivity materials
	3 rd	Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)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



GOVERNMENT POLYTECHNIC KORAPUT
DEPARTMENT OF ELECTRICAL ENGINEERING

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


Signature of faculty concerned


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