UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA

LESSON PLAN

SUBJECT- TH.4 ELECTRICAL ENGINEERING MATERIAL

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DEPARTMENT OF ELECTICAL ENGINEERING
(Session: 2022-23)

WEEKS	TOPICS TO BE COVERED
1	Conducting Materials:Introduction: Classification of materials
	Resistivity, factors affecting resistivity
	Classification of conducting materials into low-resistivity and high resistivity materials
	Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)
2	Low Resistivity Materials and their Applications. (Copper, Silver, Gold, Aluminum, Steel)
	Stranded conductors, Bundled conductors, Low resistivity copper alloys
	High Resistivity Materials and their Applications(Tungsten, Carbon, Platinum, Mercury)
	Superconductivity: Superconducting materials, Application of superconductor materials
3	CLASS TEST -01
	Semiconducting Materials: Introduction, Semiconductors
	Electron Energy and Energy Band Theory, Excitation of Atoms, Insulators, Semiconductors and Conductors
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4	Semiconductor Materials: Covalent Bonds, Intrinsic Semiconductors, Extrinsic Semiconductors
	N-Type Materials, P-Type Materials, Minority and Majority Carriers

	Semi-Conductor Materials, Applications of Semiconductor materials: Rectifiers
	Temperature-sensitive resisters or thermistors
5	Photoconductive cells, Photovoltaic cells
	Varisters, Transistors
	Hall effect generators, Solar power
	CLASS TEST -02
6	Insulating Materials:Introduction, General properties of Insulating Materials: Electrical properties, Visual properties
	General properties of Insulating Materials: Mechanical properties, Thermal properties, Chemical properties, Ageing
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	Introduction: Classification of insulating materials on the basis physical and chemical structure
7	Insulating Materials – Classification, properties, applications
	Insulating Gases: Introduction. Commonly used insulating gases
	General properties of Insulating Materials: Mechanical properties, Thermal properties, Chemical properties, Ageing
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8	Introduction: Classification of insulating materials on the basis physical and chemical structure
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	Insulating Materials – Classification, properties, applications
	Insulating Gases: Introduction. Commonly used insulating gases
9	Dielectric Materials: Introduction, Dielectric Constant of Permittivity
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	Polarization
	Dielectric Loss
10	Electric Conductivity of Dielectrics and their Break Down
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	Properties of Dielectrics. Applications of Dielectrics.
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11	Magnetic Materials: Introduction: Classification: Diamagnetism, Para magnetism, Ferromagnetism
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	Magnetization Curve, Hysteresis
12	Magnetization Curve, Hysteresis
	Eddy Currents, Curie Point, Magneto-striction
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	Soft magnetic materials
13	Soft magnetic materials
	Hard magnetic materials
	Hard magnetic materials
	Materials for Special Purposes: Introduction: Structural Materials, Protective Materials
14	Materials for Special Purposes: Introduction: Structural Materials, Protective Materials
	Lead, Steel tapes, wires and strips
	Other Materials: Thermocouple materials, Bimetals
	Soldering Materials, Fuse and Fuse materials.
15	Soldering Materials, Fuse and Fuse materials.
	Dehydrating material.
	Revision
	Previous Year Question Answer Discussion