

Discipline:- Electrical Engg		Semester 3rd	Name of the teaching Faculty H. Garnaik
Subject:- Electrical Engg Material.		No. of days per week class 91.	Semester from date:- 01/10/21 to date:- 08/11/22. No of weeks - 15
Months	Weeks	class day	Theory Topics.
October.	1st	1st	1. conducting materials. 1.1 Introduction.
		2nd.	1.2. Resistivity, factors affecting resistivity
		3rd.	1.3. classification of conducting materials into low resistivity and high resistivity materials.
		4th.	1.4. low resistivity materials and their applications. (Copper, Silver, Gold, Aluminium, steel)
	2nd.	1st.	continue.
		1st 2nd.	1.5. Stranded conductors
		3rd.	1.6. Bundled conductors.
		4th.	1.7 low resistivity copper alloys.

Months	Weeks	Classday	Theory topics
	3rd.	1st.	continue.
		2nd.	continue.
	3rd.		1.8. High resistivity materials and their applications. (Tungsten, carbon, Platinum, mercury)
		4th	continue.
	4th.	1st.	1.9. Superconductivity.
		2nd.	1.10. Superconductivity materials.
		3rd.	1.11. Application of superconductivity materials
		3rd 4th.	continue. 2. Semiconducting materials
November	1st	1st	2.1. Introduction.
			2.2. Semiconductors
			2.3. Excitation of atoms.
		2nd.	2.4. Electron energy and energy band theory.
		3rd.	2.5. Insulators, semiconductors and conductors.
			2.6. Semiconductor materials
			2.7. Covalent Bonds

Months	Weeks	Classday	Theory topics
		4th.	2.8. Intrinsic Semiconductor.
	2nd.	1st.	2.9. Extrinsic semiconductors
			2.10. N-type materials.
		2nd.	2.11. P-type materials
			2.12. minority and majority carriers.
		3rd.	2.13. Semi-conductor materials
			2.14. Applications of semiconductor materials.
			2.14.1. Resistors.
		4th.	2.14.2. Temperature-sensitive resistors of thermistors.
			2.14.3. Photoconductive cells
		3rd.	2.14.4. Photovoltaic cells.
			2.14.5. Varistors.
		2nd.	2.14.6. Transistors.
			2.14.7. Hall effect generator
			2.14.8. Solar power.

Months	Weeks	Classday	Theory topics
			3. Insulating materials.
		3rd.	2.1. Introduction.
			2.2.1. General Properties of insulating materials.
			2.2.2. visual properties -
			2.2.3. mechanical properties.
			2.2.4. Thermal Properties.
4th	1st.		2.2.5. Chemical Properties.
			2.2.6. Ageing.
	2nd.		3.3. Insulating materials: classification, Properties, applications.
	3rd.		3.3.1. Introduction.
	4th.		3.3.2. classification of insulating materials on the basis of physical and chemical structure.
December	1st	1st.	2.4. Insulating glasses.
		2nd.	3.4.1. Introduction.
		3rd.	3.4.2. Amorphous and insulating glasses.

Months	Weeks	Classday	Theory topics
		4th.	4. Dielectric materials.
			4.1. Introduction.
	2nd.	1st.	4.2. Dielectric constant or permittivity.
		2nd.	4.3. polarization.
		3rd.	4.4. Dielectric loss.
		4th.	→ continue.
	3rd.	1st.	4.5. Dielectric conductivity of dielectrics and their break-down.
		2nd.	4.6. Properties of dielectrics.
		3rd.	4.7. Applications of dielectrics.
		4th.	5. Magnetic materials.
			5.1. Introduction.
			5.2. classification.
		4th.	5.2.1. Diamagnetism.
			5.2.2. Paramagnetism.
			5.2.3. Ferromagnetism.

months	weeks	Day	Theory topics
			5.2. magnetization curve.
		3rd.	5.4. Hysteresis
		4th.	5.5. Eddy currents
January	1st	1st.	5.6. Curie point.
		2nd.	5.7. magnetostriktion.
		3rd.	5.8. soft and hard magnetic materials.
			5.8.1. Soft magnetic materials.
			5.8.2. Hard magnetic materials.
		4th.	6. materials for special purposes.
			6.1 Introduction.
	2nd	1st	6.2. Structural materials.
		2nd	6.3. Protective materials.
			6.3.1 Lead.
		3rd.	6.3.2. Steel tapes, wires and strips.
		4th.	6.4. other materials.

months	weeks	Day	Theory topics
	3rd	1st.	6.4.1. Thermocouple materials.
		2nd.	Bimetals
		3rd.	6.4.2. Soldering materials
		4th.	6.4.4. Fuse and fuse materials.
			6.4.5. Dehydrating materials.