Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2023

Subject Code:3160923 Date:07-12-2023

Subject Name:Electrical Materials

Time:02:30 PM TO 05:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	Give classification of conducting material.	**03**
	(b)	List the different material used in making of AC and DC Machine?	**04**
	(c)	State the properties and applications of Copper.	**07**
Q.2	**(a)**	What are the desirable qualities of high conducting material?	**03**
	(b)	Enlist the factors affecting conductivity and resistivity of material.	**04**
	(c)	Discuss properties of high resistivity material.	**07**
		OR	
	(c)	Write a short note on: Radioactive material.	**07**
Q.3	**(a)**	Define “dielectric strength” of material. List the factors affecting it.	**03**
	(b)	Define : (i) Polarization (ii) dielectric loss & loss angle.	**04**
	(c)	Discuss classification of Insulating material based on temperature.	**07**
		OR	
Q.3	**(a)**	Discuss effect of “moisture” on the insulating material.	**03**
	(b)	Explain transformer oil as an insulating material.	**04**
	(c)	Explain the different Electrical properties of Insulating Materials.	**07**
Q.4	**(a)**	Discuss briefly: Classification of magnetic material.	**03**
	(b)	Explain the difference between hard and soft magnetic materials.	**04**
	(c)	Discuss the High Frequency Materials.	**07**
		OR	
Q.4	**(a)**	Explain “losses” in magnetic materials.	**03**
	(b)	Explain B-H curve of magnetic material.	**04**
	(c)	State and explain the properties of Magnetic Materials.	**07**
Q.5	**(a)**	Explain effect of temperature on semiconductor.	**03**
	(b)	Compare: P- type and N-type semiconductor material.	**04**
	(c)	Compare Type-I and Type-II superconductor.	**07**
		OR	
Q.5	**(a)**	Prepare a list of: Types and applications of Semiconductor.	**03**
	(b)	What is superconductor? Explain the applications of super Conducting materials.	**04**
	(c)	Write Properties of superconductors.	**07**

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