Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VI (NEW) EXAMINATION – WINTER 2024

Subject Code:3160923 Date:28-11-2024

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 Electrical material.	**03**
	(b)	Explain intrinsic and extrinsic semiconductors.	**04**
	(c)	Explain difference between hard and soft magnetic material.	**07**
Q.2	**(a)**	Explain the meaning of semiconductors. Give two examples of semiconductors.	**03**
	(b)	Give the characteristics of a good conductor material.	**04**
	(c)	List out the commonly used conductor materials and give any two conductor materials properties in brief.	**07**
		OR	
	(c)	Discuss properties of high resistivity material.	**07**
Q.3	**(a)**	Classification of Insulating material based on temperature.	**03**
	(b)	Name four natural insulating materials. Mention their most important properties and their application.	**04**
	(c)	Give and Justify choice of magnetic material for (1)transformer core (2)Stator of DC (3) Submarine cable(3) core of CT and PT	**07**
		OR	
Q.3	**(a)**	Give classification of magnetic material and explain in brief.	**03**
	(b)	Enumerate the factors that affect the dielectric strength.	**04**
	(c)	Write short notes on: mechanical and electrical properties of dielectric materials.	**07**
Q.4	**(a)**	Define curie point.	**03**
	(b)	Define magnetostriction.	**04**
	(c)	Discuss transformer oil as insulating material.	**07**
		OR	
Q.4	**(a)**	State the advantage of grain orientation.	**03**
	(b)	Make a list of the factors affecting the insulating resistance of a material.	**04**
	(c)	Write short notes on polarisation.	**07**
Q.5	**(a)**	Explain the functions of structural materials.	**03**
	(b)	Explain radioactive material. List out at least two radioactive materials.	**04**
	(c)	Write short notes on refractory materials.	**07**
		OR	
Q.5	**(a)**	Explain the important characteristics of a thermocouple materials.	**03**

(b)	Discuss Nickel Iron alloys.	**04**
(c)	Explain Galvanizing and different methods of Galvanizing.	**07**

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