

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2024****Subject Code:3160923****Date:20-05-2024****Subject Name:Electrical Materials****Time:10:30 AM TO 01:00 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) What are the properties of good conductors?	03
	(b) Compare copper and aluminum as conducting material.	04
	(c) Discuss properties of high resistivity material	07
Q.2	(a) What is dielectric? Why it is used in capacitors?	03
	(b) Why is CRGO steel used to make the core of transformer?	04
	(c) Discuss the thermal properties of insulating materials.	07
OR		
	(c) Explain the different electrical properties of insulating materials?	07
Q.3	(a) Give classification of insulating material based on substances and materials with example.	03
	(b) Explain the difference between diamagnetic and paramagnetic materials.	04
	(c) Write short note on magnetic hysteresis.	07
OR		
Q.3	(a) What is dielectric strength of material? Which factors affect the dielectric strength of material?	03
	(b) Explain the difference between hard and soft magnetic materials.	04
	(c) Write short notes on permanent magnet materials.	07
Q.4	(a) What is Peltier effect?	03
	(b) Give brief description and applications of (1) PN junction diode (2) Silicon controlled rectifier	04
	(c) Discuss properties of superconductors.	07
OR		
Q.4	(a) What is Seebeck effect?	03
	(b) Explain the applications of superconducting materials.	04
	(c) Compare Type-I and Type-II superconductor.	07
Q.5	(a) What do you mean by critical temperature in super conductivity?	03
	(b) List and describe the properties of high-frequency materials.	04
	(c) Write short notes on refractory materials.	07

OR

- Q.5**
- (a)** What is radioactive material? List out at least two radioactive materials. **03**
 - (b)** List out the materials used in making a DC machine and briefly explain their roles **04**
 - (c)** Explain different methods of Galvanizing. **07**
