

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER– VI EXAMINATION – SUMMER 2026

Subject Code:3160923

Date:26-05-2026

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.

- Q.1** (a) What is Intrinsic and Extrinsic semiconductors? **03**
(b) Draw and Explain BH curve of magnetic material. **04**
(c) Enlist the different conducting materials. State the properties and application of any one. **07**
- Q.2** (a) Discuss transformer oil as insulating material. **03**
(b) What is Seeback effect? **04**
(c) Explain the different Electrical properties of Insulating Materials? **07**

OR

- (c) Enlist solid insulating materials in Electrical Machines and explain any two with its characteristics **07**
- Q.3** (a) What is dielectric? Why it is used in capacitors? **03**
(b) Explain hysteresis and eddy current loss. **04**
(c) Compare type-I and type-II superconductors. **07**

OR

- Q.3** (a) What are the various thermal properties of insulating materials? **03**
(b) What is dielectric Strength of material? Which factors affect the dielectric strength of material? **04**
(c) Explain properties and application of superconductor. **07**
- Q.4** (a) What is the effect of moisture in insulating material? **03**
(b) Give brief note on amorphous material. **04**
(c) What are Refractory Materials? Give applications of different types of Refractory Materials. **07**

OR

- Q.4** (a) Compare Copper and Aluminum conducting materials. **03**
(b) Define and explain coercive force and curie temperature. **04**
(c) What is Galvanizing? Explain different methods of Galvanizing. **07**
- Q.5** (a) Which are the applications of Soft Ferrites? **03**
(b) Explain CRGO and HRGO materials. **04**
(c) Write short note on Radioactive Material. **07**

OR

- Q.5** (a) What do you mean by critical temperature in super conductivity? **03**
(b) Discuss Nickel Iron alloys. **04**
(c) Write short note on the High Frequency Materials. **07**
