R22 Regulation *Subject code: 4O5BB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech V Semester Supplementary Examinations, May 2025

ELECTRICAL ENGINEERING MATERIALS

(EEE)

Maximum Marks: 60 Date: 26.06.2025 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	What is mean by dielectric loss?	1M	1	1
b)	What do you mean by Ferroelectricity?	1M	1	1
c)	Define the term 'Permeability'. State its unit.	1M	2	1
d)	List the special purpose materials.	1M	2	1
e)	Write short note on intrinsic and extrinsic semiconductors.	1M	3	1
f)	What is meant by doping in semiconductor?	1M	3	1
g)	State the materials used for fuses.	1M	4	1
h)	Write short note on Solid, Liquid and Gaseous insulating materials.	1M	4	1
i)	What is mean by galvanization?	1M	5	1
j)	What is the use of transformer oil?	1M	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	What is meant by polarization in dielectric materials? Explain briefly.	10M	1	2
	OR			
3	a) Describe the breakdown in solid dielectric materials. b) Explain the concept of anti-ferromagnetism.	5M 5M	1	3
4	Draw and explain the typical magnetization curve for a ferromagnetic material. State the application of ferromagnetic materials.	10M	2	2
	OR			
5	Explain the concept of magnetostriction effect and state it's applications.	10M	2	2
6	Distinguish between P-type and N-type semiconductors in any five aspects.	10M	3	4
	OR			
7	Explain the following materials used for fabrication of semiconductors: (i) Substrate (ii) Capacitance materials (iii) Metals	10M	3	2

8	Briefly explain about the materials used for Resistors, rheostats, heaters, transmission line structures, stranded conductors, bimetals fuses, soft and hard solders.	10M	4	2
	OR			
9	Explain the thermocouple materials and give any two examples of thermocouple materials.	10M	4	2
10	Explain the process of Galvanization and Impregnation of materials.	10M	5	2
	OR			
11	Explain the electrical and thermal properties of transformer oil that make it suitable as an electrical insulating medium.	10M	5	2