R22 Regulation *Subject code:4B2AI*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Supplementary Examinations, January 2026

ENGINEERING CHEMISTRY

(Common to ECE & IT)

Maximum Marks: 60 Date: 27.01.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 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	BTL
1.a	Write any two postulates of Molecular orbital theory	1M	1	1
b	Define Bond order	1M	1	1
c	Why the hardness is expressed in CaCO3 equivalents?	1M	1	1
d	Define Scale and sludge.	1M	1	1
e	Give two differences between Battery and fuel cell.	1M	2	1
f	Define corrosion.	1M	2	1
g	What are biodegradable polymers?	1M	1	1
h	Define conducting polymer and give two examples.	1M	1	1
i	Define Elastomers? Give two examples.	1M	3	1
j	Write the reaction for the formation of nylon-6,6 ?	1M	3	1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	Explain energy level diagram for nitrogen, calculate the bond order and discuss its magnetic property	10M	2	1
	OR			
3	Explain about the band theory in solids.	10M	4	1
4	Write a short note on a) Break point of Chlorination. b) Caustic embrittlement.	5M 5M	1 1	3 3
	OR			
5	Illustrate the steps involved in the treatment of Potable water.	10M	1	1
6	Explain the mechanism of formation of rust by Evolution of Hydrogen and Absorption of Oxygen.	10M	2	2
	OR			
7	Explain the Construction, working and applications of Methanol Oxygen fuel cell.	10M	2	2
8	Explain the preparation, properties and applications of a) Buna-S rubber and b)Butyl rubber.	5M 5M	3 3	2 2

	OR			
9	What is vulcanization? How does it improve the properties of natural rubber.	10M	3	2
10	Explain Fischer tropsch's process for synthesis of petrol.	10M	2	4
	OR			
11	Give an account of the analysis of coal by Proximate analysis.	10M	2	4