R22 Regulation *Subject code: 4B2AI*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Regular/Supplementary Examinations, July 2025

ENGINEERING CHEMISTRY

(Common to ECE & IT)

Maximum Marks: 60 Date:17.07.2025 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	Define bond order.	1M	1	1
b	Why doping is important in semiconductor?	1M	1	2
c	What are the hardness causing salts in water?	1M	2	1
d	How temporary hardness can be removed from water?	1M	2	1
e	Write the basic requirement for commercial batteries?	1M	3	2
f	What is primary battery?	1M	3	1
g	What is the composition of Natural gas?	1M	4	2
h	What is cracking?	1M	4	2
i	What are the repeating unit for PVC?	1M	5	1
j	Give the use of Elastomers (rubber)	1M	5	2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	Explain the Molecular orbital energy level diagram of N_2 and O_2 Molecule.	10M	1	3
	OR			
3	Construct the pi- Molecular orbital energy level diagram of 1,3-Butadiene.	10M	1	2
4	a) List the specifications of potable water. b) Explain about Reverse osmosis.	5M 5M	2	2 2
	OR			
5	Outline the softening method of water by ion exchange process with neat diagram.	10M	2	2
6	Explain the construction, charging and discharging reactions of lithium-ion battery and write its applications.	10M	3	2
	OR			
7	What is Cathodic protection? What are the types of cathodic protection? Explain them.	10M	3	2

8	Write an account on the refining of petroleum.	10M	4	2
	OR			
9	Give an account of the analysis of coal by ultimate analysis.	10M	4	2
10	a) Discuss preparation and applications of Buna-S rubber. b) Explain the differences between thermo plastics and thermosetting plastics	5M 5M	5	3 3
	OR			
11	Discuss the preparation, properties and applications of the following polymers. a) PVC b) Bakelite	5M 5M	5	2 2