R22 Regulation *Subject code:4H1AH*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, June 2026

ENGINEERING CHEMISTRY

(Common to CSE, CSE (AI&ML), CSE(DS))

Maximum Marks: 60 Date: 18.06.2026 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	What is the magnetic nature of 'O_2'molecule?	1M	1	L1
b	Explain p-type Semiconductors?	1M	1	L1
c	How temporary hardness differ from permanent hardness?	1M	2	L1
d	What is reverse osmosis?	1M	2	L1
e	Define secondary cell? Give examples?	1M	3	L1
f	Explain the applications of Zn-air battery?	1M	3	L1
g	Define calorific value of fuel?	1M	4	L1
h	Write a note on following terms a) LPG b) CNG.	1M	4	L1
i	Define the following terms with examples. a) Polymer b) Degree of Polymerization.	1M	5	L1
j	Differentiate between thermoplastics and thermosetting plastics?	1M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	Explain in details about band theory of conducting materials.	10M	1	L2
	OR			
3	Explain about band theory in solids.	10M	1	L2
4	Describe the ion-exchange process for the removal of hardness of water with a net diagram.	10M	2	L2
	OR			
5	Outline various steps involved in the treatment of potable water.	10M	2	L2
6	Write in details about Zinc air batteries and its applications.	10M	3	L2
	OR			
7	Explain the construction, working and applications of Lithium-ion battery.	10M	3	L2

8	Define refining of petroleum? Discuss the various steps of processing of petroleum to obtain gasoline and other important fractions?	10M	4	L2
	OR			
9	a) How to calculate percentage of moisture content and ash content present in the coal? Explain? b) Write composition and uses of Natural gas, LPG and CNG.	5M 5M	4	L2
10	Explain the preparation, properties and engineering applications of following. a) PVC b) Teflon.	5M 5M	5	L2
	OR			
11	a) Write the preparation and applications of Buna –S. b) Explain condensation polymerization.	5M 5M	5	L2