R22 Regulation *Subject code: 4H1AH*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Regular/Supplementary Examinations, January 2024

Engineering Chemistry

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

Maximum Marks: 60 Date:22.01.2024 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)			CO No.	Bloom Tx
1.	a	Define bond order.	CO1	I
	b	Why doping is important in semiconductor?	CO1	II
	c	List the salts responsible for the temporary hardness of water.	CO2	I
	d	Bring out the difference between scale and sludge.	CO2	II
	e	Mention two factors that influence the corrosion of metals.	CO3	II
	f	Define batteries.	CO3	II
	g	Write a few characteristics of a good fuel.	CO4	I
	h	Define knocking.	CO4	I
	i	What are the repeating units of PVC?	CO5	I
	j	Give the uses of elastomers.	CO5	II

Part-B

Answer All the following questions. (5X10M=50Marks)				
2		Explain the molecular orbital energy level diagram for N_2. (10M)	CO1	III
		OR		
3		A. With a neat sketch explain the π-molecular orbitals of benzene. (5M) B. Discuss the Energy Bands, for solids. (5M)	CO1	III
4		A. Describe an ion exchange process and explain the reactions involved in the process. (7M) B. Add a note on phosphate conditioning. (3M)	CO2	II
		OR		
5		A. List the essential requirements of boiler feed water. (4M) B. Give a short account of various boiler troubles and how they can be prevented. (6M)	CO2	III

6	Explain the construction, working and applications of Zinc-air battery. (10M)	CO3	II
	OR		
7	Discuss the principle of cathodic protection. Add a note on the sacrificial anode protection, its advantages and disadvantages. (10M)	CO3	III
8	Describe ultimate analysis of coal and its significance. (10M)	CO4	II
	OR		
9	Explain the preparation of synthetic petrol by Fischer-Tropsch's process. (10M)	CO4	II
10	A. Discuss the classification of natural rubber and process of vulcanization. (4M) B. Write about the preparation, properties and applications of Bakelite. (6M)	CO5	III
	OR		
11	What are conducting polymers? Describe the classification and mechanism of Conducting polymers. (10M)	CO5	II