R22 Regulation *Subject code: 4B2AI*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Regular Examinations, September 2023

Engineering Chemistry

(Common to ECE & IT)

Maximum Marks: 60 Date:22.09.2023 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)

1. a Define atomic and molecular orbitals.
   b What is the magnetic property in CO molecule?
   c Define break point chlorination.
   d Mention the two types of hardness with examples.
   e Define Corrosion.
   f Differentiate between primary and secondary batteries.
   g Write the Dulong's formula ?
   h What is CNG?
   i Write the monomers of Bakelite?
   j What is the significance of vulcanization process.

Part-B

Answer All the following questions. (5X10M=50Marks)

2 Construct the molecular orbital energy level diagram of N2 & F 2 Molecule. [10M]

OR

3 a) Write the postulates of molecular orbital theory? [5M]
b) Differentiate between Atomic and molecular orbitals. [5M]

4 Describe the estimation of water by EDTA method? [10M]

OR

5 a) Discuss about scales and sludges. [5M]
b) Describe the ion-exchange process for the removal of hardness of water with a neat diagram? [5M]

6 Define fuel cells. Explain the construction and working of Solid – Oxide fuel cell? [10M]

OR

7 Write about the construction & working principle of Lithium-ion battery. [10M]

8 Explain about Coal analysis. [10M]

OR

9 a) Explain about refining of petroleum with a neat labelled diagram. [5M]
b) Describe about Gaseous fuels and its types. [5M]

10 Explain the preparation, properties and applications of PVC. [10M]

OR

11 Explain the mechanism of conducting polymers by taking an example as trans-polyacetylene. [10M]