



R22 Regulation  
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY  
(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code: 4B2AD

## B.Tech II Semester Regular Examinations, September 2023

### Applied Chemistry (Common to CE and EEE)

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 hardness of water and mention its causes.  
b Define break point chlorination.  
c Differentiate between primary and secondary cells?  
d Define Corrosion.  
e Define Elastomers.  
f What is a monomer of natural rubber?  
g Write the Dulong's formula?  
h Define HCV and LCV.  
i What are Refractories?  
j What is a Lubricant?

#### Part-B

Answer All the following questions.

(5X10M=50Marks)

- 2 Describe the ion-exchange process for the removal of hardness of water with a neat diagram? [10M]

OR

- 3 Define desalination? Explain the method of reverse osmosis. Mention its advantages? [10]

- 4 Explain the construction and working of Methanol-Oxygen fuel cell? [10M]

OR

- 5 a) Explain the construction and working principle of Lithium-ion battery. [5M]  
b) What is electrochemical corrosion and its mechanism. [5M]

- 6 a) Write the preparation, properties and applications of PVC. [5M]  
b) Differentiate between addition and condensation polymerization. [5M]

OR

- 7 Explain the preparation, properties and engineering applications of Bakelite. [10]

- 8 How can we synthesize synthetic petrol by Fischer-tropsch process. [10M]

OR

- 9 a) Calculate the gross and net calorific value of a coal sample having the following [5M]  
Composition C = 85 %, H = 8 %, S = 1 %, N = 2 %, and ash = 4  
b) Define cracking? Describe the moving bed catalytic cracking. [5M]
- 10 What do you mean by setting and hardening of cement and explain the steps involved with the help of chemical equations. [10M]
- OR
- 11 a) Write the classification of lubricants with examples. [5M]  
b) What are the characteristics of a good lubricant. [5M]