



R18 Regulation

Subject code: 2B1AG

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

## B.Tech I Semester Supplementary Examinations, June 2024

### Engineering Chemistry

(Common to ECE & CSE)

Maximum Marks: 70

Date: 01.07.2024 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 (10X2M=20 Marks)		CO	Bloom Tx
1	Energy level diagram of O <sub>2</sub>	1	L1
2	Crystal field splitting in tetrahedral complexes.	1	L1
3	What are the units of hardness of water.	2	L1
4	Write any four specifications of drinking water?	2	L1
5	Define oxidation potential.	3	L1
6	What are causes of corrosion?	3	L1
7	Define E – Z Isomers? Give two examples.	4	L1
8	What is Markownikoff rule.	4	L1
9	What is chemical shift.	5	L1
10	What is shielding and deshielding?	5	L1

#### Part-B

Answer All the following questions. (5X10M=50Marks)			
11	(a) Write the energy level diagram of Benzene and HF. [5] (b) Explain the crystal field splitting of d – orbitals of tetrahedral complexes With neat diagram. [5]	1	L2
OR			
12	(a) What is doping and dopant? Explain how doping effects the conductivity of semiconductor. [5] (b) Write the energy level diagram of N <sub>2</sub> . [5]	1	L2
13	(a) Define hardness of water? How can we remove hardness of water by using ion exchange process. [5] (b) A sample of water contains Mg <sup>2+</sup> = 18 Mg/L, Ca <sup>2+</sup> = 30 Mg/L, Co <sub>2</sub> = 11 Mg/L HCO <sub>3</sub> = 122 Mg/ L, then calculate temporary & permanent hardness of water In Degree Clarke & Degree French. [5]	2	L2
OR			
14	(a) Write note on Boiles corrosion. [5] (b) Explain about the Reverse osmosis. [5]	2	L2

15	(a) How can you determine pH of unknown solution by using Quinone – hydroquinone electrode. [5] (b) Describe the construction and working of a lithiumion battery. [5]	3	L2
OR			
16	(a) Explain the mechanism of pitting corrosion with suitable illustration. [5] (b) Write a short notes on (a) Galvanisation (b) Tinning [5]	3	L2
17	Explain the different conformations of n – butane. [10]	4	L2
OR			
18	(a) Explain elimination reactions with examples. [5] (b) Explain oxidation of alcohol using $\text{KMnO}_4$ and chromic acid. [5]	4	L2
19	(a) Write a notes on vibrational and rotational spectroscopy. [5] (b) Write a note on Chemical Shift ? [5]	5	L2
OR			
20	(a) Explain the application of NMR spectroscopy. [5] (b) Write the basic principles of Magnetic Resonance Imaging (MRI). [5]		