



R18 Regulation

Subject code:2B2AC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Supplementary Examinations, January 2026

ENGINEERING CHEMISTRY

(Common to CE, EEE, ME & IT)

Maximum Marks: 70

Date:22.01.2026

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 (10X2M=20 Marks)		Marks	CO	BTL
1	Define bond order.	2M	1	L1
2	Write the two limitations of crystal field theory.	2M	1	L1
3	Explain phosphate conditioning.	2M	2	L1
4	What is meant by desalination of Brackish water?	2M	2	L1
5	Define single electrode potential and EMF of the cell.	2M	3	L1
6	Define Fuel cell.	2M	3	L1
7	Define optical activity.	2M	4	L1
8	Define Markownikoff rule.	2M	4	L1
9	Write selection rule for UV-Visible spectroscopy.	2M	5	L1
10	Define chemical shift.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	a) Explain the salient features of MOT theory by LCAO method.	5M	1	L2
	b) Explain bond order and magnetic properties of O ₂ and CO by using molecular orbital energy level diagrams.	5M		
OR				
12	a) Explain the postulates of CFT theory.	5M	1	L2
	b) Discuss the crystal field splitting in octahedral complexes in detail.	5M		
13	a) Write a note on scale formation, prevention and its disadvantages.	5M	2	L2
	b) Explain the softening of water by using ion exchange process.	5M		
OR				
14	How can we estimate hardness of water by using EDTA method?	10M	2	L2
15	a) Explain the working of calomel Electrode.	5M	3	L2
	b) Explain the mechanism of dry corrosion.	5M		
OR				
16	a) Define Batteries. Explain lead-acid storage cell.	5M	3	L2
	b) Explain factors effecting rate of corrosion.	5M		

17	a) Write the reactions of Grignard additions on carbonyl compounds. b) Write the reaction mechanism of Pinacol-Pinacolone rearrangement.	5M 5M	4	L2
OR				
18	Write the synthesis and pharmaceutical applications of Aspirin and Paracetamol.	10M	4	L2
19	a) Brief explain about Magnetic Resonance Imaging (MRI) b) Write about rotational and vibration spectroscopy and its selection rule.	5M 5M	5	L2
OR				
20	a) Explain the types of transition in electronic spectroscopy. b) Write the applications of IR Spectroscopy.	5M 5M	5	L2