



R20 Regulation Subject code:3B2AJ
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A+' Grade)

B. Tech II Semester Supplementary Examinations, January 2026
ENGINEERING CHEMISTRY

(ME)

Maximum Marks: 70

Date: 20.01.2026

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 (10X2M=20 Marks)		Marks	CO	BTL
1	What is the magnetic nature of 'N ₂ ' molecule?	2M	1	L1
2	What is meant by Doping in case of Semiconductors?	2M	1	L1
3	What is meant by Hardness of water?	2M	2	L1
4	What is reverse osmosis?	2M	2	L1
5	Write the overall reaction of lead – acid storage battery	2M	3	L1
6	What is electro chemical series?	2M	3	L1
7	Define water line corrosion.	2M	4	L1
8	Define wet corrosion.	2M	4	L1
9	What is knocking?	2M	5	L1
10	What is the cetane number of diesel fuel?	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	a) Explain the postulates of MOT theory.	5M	1	L2
	b) Construct molecular orbital energy level diagram of F ₂ molecule.	5M		
OR				
12	a) Explain band theory of solids.	5M	1	L2
	b) Explain the crystal field splitting in tetrahedral metal complexes.	5M		
13	What is the principle of EDTA titration? How the permanent hardness of water is determined using EDTA method.	10M	2	L2
OR				
14	a) Explain the treatment of potable water.	5M	2	L2
	b) Explain in detail about boiler corrosion.	5M		
15	a) Derive Nernst equation for the potential of a single electrode?	5M	3	L2
	b) Explain glass membrane electrode.	5M		
OR				

16	Explain the construction and working of Lead -acid storage battery and write its applications.	10M	3	L2
17	a) Define corrosion? Explain types of corrosion. b) Explain sacrificial anode cathodic protection in corrosion control method.	5M 5M	4	L2
	OR			
18	a) Explain Waterline corrosion. b) Explain the mechanism of pitting corrosion with a suitable example.	5M 5M	4	L2
19	a) Explain determination of Nitrogen in Ultimate analysis of coal. b) Explain which parameters are determined in proximate analysis.	5M 5M	5	L2
	OR			
20	a) Describe the fractional distillation of Petroleum. b) What is synthetic petrol? Discuss any one method to prepare synthetic petrol.	5M 5M	5	L2