



R20 Regulation

Subject code: 3B2AJ

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Supplementary Examinations, June 2024

Engineering Chemistry

(ME)

Maximum Marks: 70

Date: 26.06.2024 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)

Q.NO	QUESTIONS	CO	Blooms Tx
1	What is the bond order in 'O ₂ ' molecule?	1	Level 2
2	Write any two differences between bonding and anti-bonding molecular orbitals?	1	Level 1
3	How can you remove temporary hardness?	2	Level 3
4	What is reverse osmosis?	2	Level 4
5	How do you differentiate a Cell from Battery?	3	Level 2
6	What is electro chemical series? Write any 2 Applications?	3	Level 1
7	Define Cetane number?	4	Level 1
8	Define wet corrosion?	4	Level 3
9	What is the difference between Gross and net calorific value?	5	Level 3
10	Define proximate analysis?	5	Level 4

Part-B

Answer All the following questions.

(5X10M=50Marks)

11	(a) Explain the postulates of MOT theory? (5M) (b) Construct molecular orbital energy level diagram of F ₂ & CO molecule. (5M)	1	Level 2
OR			
12	(a) Explain the salient features of Crystal field theory? (5M) (b) Explain about crystal field splitting in Octahedral complexes. (5M)	1	Level 2
13	What is the principle of EDTA titration? How the permanent hardness of water is determined using EDTA method. (10M)	2	Level 3
OR			
14	(a) Explain the treatment of potable water. (5M) (b) Explain in detail about formation of Scales and Sludges in boilers. (5M)	2	Level 2

15	(a) Derive Nernst equation for the potential of a single electrode? (5M) (b) Explain about construction and working of saturated calomel electrode. (5M)	3	Level 3 Level 2
OR			
16	Explain the construction and working of Lead -acid storage battery and write its applications? (10M)	3	Level 3
17	(a) Write a note on cathodic protection (5M) (b) Explain the factors effecting rate of corrosion. (5M)	4	Level 4 Level 3
OR			
18	(a) Explain dry corrosion mechanism? (5M) (b) Explain impressed current cathodic protection? (5M)	4	Level 2 Level 3
19	(a) Explain determination of Nitrogen in Ultimate analysis of coal? (5M) (b) Explain which parameters are determined in proximate analysis? (5M)	5	Level 4 Level 3
OR			
20	(a) Describe the fractional distillation of Petroleum? (5M) (b) What is synthetic petrol? Discuss any one method to prepare synthetic petrol. (5M)	5	Level 4 Level 3