R18 Regulation *Subject code:2BIAG*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

Indian in Character ✪ International in Excellence

B.Tech. I Semester Supplementary Examinations, January 2025

ENGINEERING CHEMISTRY

(Common to ECE & CSE)

Maximum Marks: 70 **Date:27.01.2025** **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
1	Write the energy level diagram of O_2.	
2	Write the paramagnetic nature of N_2 molecule.	
3	What is reverse osmosis?	
4	Write any 4 specifications of drinking water?	
5	What is the significance of electro chemical series?	
6	What are the disadvantages of corrosion?	
7	Define E – Z Isomers? Give two examples.	
8	What is Markownikoff rule.	
9	What is chemical shift.	
10	What is shielding and deshielding in NMR?	

Part-B

Answer All the following questions.			(10M X 5=50Marks)
11	(a) Explain the salient features of MOT theory.		[5M]
	b Explain bond order and magnetic properties of N_2.		5M
	OR		
12	(a) Explain crystal field splitting in strong field square planner complexes.		[5M]
	(b) Write notes on LCAO.		[5M]
13	(a) Define hardness of water? How can we remove hardness of water by using ion exchange process.		[5M]
	(b) A sample of water contains Mg^{2+} = 16 Mg/L, Ca^{2+} = 30 Mg/L, Co_2 = 11 Mg/L HCo_3 = 122 Mg/ L, then calculate temporary & permanent hardness of water in Degree Clarke & Degree French.		5M
	OR		
14	Explain the steps involved in potable water treatment.		[10M]
15	(a) How do you determine the pH of an unknown solution by using Glass electrode?		[5M]
	b Write mechanism of electrical corrosion.		5M
	OR		

16	(a) What is battery ? Explain lead – acid storage cell. (b) Write a notes on cathodic protection of corrosion control method.	[5M] [5M]
17	(a) What are SN^1 SN^2 reactions? Give examples. (b) Explain the different conformations of n – butane.	[5M] [5M]
	OR	
18	What are Addition reactions? Explain the possible mechanism with an example.	[10M]
19	(a) Explain about various electronic transitions in UV spectroscopy? (b) Write a note on magnetic resonance imaging (MRI)	[5M] [5M]
	OR	
20	(a) Write a note on chemical shift. (b) Explain the types of vibrations in IR spectroscopy.	[5M] [5M]