Regulation R20 *Subject code:3B1AN*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, January 2024
CHEMISTRY

(Common to CSE,CSE(AI&ML),CSE(DS) &I T)

Maximum Marks: 70 ***Date:22.01.2024*** 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	What is the magnetic nature of 'N_2'molecule?	CO1	Level 2
2	What is meant by Doping in case of Semiconductors?	CO1	Level 1
3	What is meant by Hardness of water?	CO4	Level 3
4	What is Colloidal conditioning of Water?	CO4	Level 4
5	Define standard electrode potential& Single electrode potential?	CO1	Level 2
6	What are the Electrodes used in Li- ion Batteries?	CO1	Level 1
7	What is sayetzeff rule?	CO1	Level 1
8	What are Enantiomers? Explain with one example.	CO2	Level 3
9	Define Beer –Lambert's law?	CO3	Level 3
10	Write the applications of UV-visible spectroscopy?	CO3	Level 4

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	A. Explain molecular orbital diagram for O_2 & N_2? [5M] B. Explain the postulates of Molecular Orbital theory? [5M]	CO1 CO1	Level 2 Level 3
	OR		
12	A. Explain the crystal field splitting of d orbital of a transition metal in octahedral complex. [5M] B. Explain the effect of doping on conductance of semiconductors? [5M]	CO1 CO2	Level 1 Level 4

13	A. Explain the ion exchange process in the softening of water? [5M] B. Define carbonate and non-carbonate hardness of water? [5M]	CO4	Level 3
	OR		
14	A. Explain the reasons for scale and sludge formation and write their disadvantages in boilers? [5M] B. Write about phosphate conditioning and calgon conditioning? [5M]	CO4	Level 2
15	A. Explain the construction and working of the calomel electrode? [5M] B. What is electro chemical series? Write its significance and applications? [5M]	CO1	Level 3 Level 2
	OR		
16	A. Explain the construction and working of lithium-ion batteries? [5M] B. Explain about H_2-O_2 fuel cells? [5M]	CO1	Level 3
17	A. Explain about Electrophilic addition reactions. [5M] B. Write a note on optical isomerism? [5M]	CO1	Level 4 Level 3
	OR		
18	A. Explain the SN^1 and SN^2 mechanism with suitable example? [5M] B. Explain the hydroboration of olefins? [5M]	CO1 CO2	Level 2 Level 3
19	A. Write a note on chemical shift? [5M] B. Explain the basic principle of NMR? [5M]	CO2 CO3	Level 4 Level 3
	OR		
20	A. What is MRI? [5M] B. Write the application IR spectroscopy? [5M]	CO3 CO3	Level 4 Level 3