R20 Regulation *Subject code: 3B2AB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Supplementary Examinations, June 2024

Material Chemistry

(CE)

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=20Marks)

Q.NO	QUESTIONS	CO	Blooms Tx
1	What is the bond order in 'O_2'molecule?	1	Level 2
2	What is meant by Doping in case of Semiconductors?	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 are the Electrodes used in Li- ion Batteries?	3	Level 1
7	Give any tree applications of Refractories.	4	Level 1
8	Define Lubricants? Explain essential properties.	4	Level 3
9	What is the finger print region in IR?	5	Level 3
10	Define auxochrome and chromophore?	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 F2 molecule. (5M)	1	Level2 Level3
	OR		
12	Explain the crystal field splitting of d orbital of a transition metal in octahedral complex. (10M)	1	Level 3
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) What is meant by desalination of water? Explain reverse osmosis? (5M) (b)What are scales and sludges? Write their disadvantages in Boilers? (5M)	2	Level 2
15	(a) Derive the Nernst equation for the potential of a single electrode (5M) (b) Explain glass membrane electrode? (5M)	3	Level3 Level2

	OR		
16	(a) Explain the construction and working of lithium-ion batteries? (5M) (b)Explain about H_2-O_2 fuel cells? (5M)	3	Level3 Level2
17	Describe the preparation, properties and engineering applications of Bakelite. (10M)	4	Level4
	OR		
18	(a) What are the applications of Refractory materials. (5M) (b) What is composition of Portland cement. (5M)	4	Level2 Level3
19	(a) Write a note on chemical shift? (5M) (b) Explain the basic principle of NMR? (5M)	5	Level4 Level3
	OR		
20	(a)Explain the principle of NMR Spectro scopey. (5M) (b) Write the application UV-visible spectroscopy? (5M)	5	Level4 Level3