



TKRCEY
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Innovation Character International Excellence

Regulation R20

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

Subject code: 3B2AJ

B.Tech II Semester Supplementary Examinations, January 2024
Engineering Chemistry

(ME)

Maximum Marks: 70

Date: 23.01.2024 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=20Marks)		CO	Bloom Tx
1	What is the bond order in 'O ₂ ' molecule?	CO4	Level 2
2	Define Doping in Semiconductors.	CO4	Level 1
3	What is meant by Hardness of water?	CO4	Level 4
4	What is Colloidal conditioning of Water?	CO4	Level 4
5	Define standard electrode potential & Single electrode potential?	CO3	Level 2
6	What are the Electrodes used in Li-ion Batteries?	CO3	Level 1
7	Give any two examples of liquid fuels?	CO3	Level 1
8	What is the octane number of a gasoline?	CO3	Level 3
9	What is the difference between Gross and net calorific value?	CO5	Level 3
10	What is meant by cracking?	CO5	Level 4

Part-B

Answer all the following questions. (5X10M=50Marks)			
11	A. Explain molecular orbital diagram for 1, 3-butadiene. [5M]	CO4	Level 2
	B. Explain the various rules for filling electrons in molecular orbital. [5M]	CO4	Level 3
	OR		
12	A. Explain band theory of solids. [5M]	CO4	Level 1
	B. Explain the crystal field splitting in tetrahedral metal complexes. [5M]		Level 4
13	What is the principle of EDTA titration? How the permanent hardness of water is determined using EDTA method. [10M]	CO4	Level 3
	OR		
14	A. Explain the reasons for scale and sludge formation and write their disadvantages in boilers? [5M]	CO4	Level 2
	B. Write about phosphate conditioning and Calgon conditioning? [5M]	CO4	
15	Explain the construction and working of the calomel electrode. [10]	CO3	Level 3

	OR		
16	What are Secondary Batteries? Explain their working with Suitable example? Explain are fuel cells? Mention their applications? [10M]	CO3	Level3
17	A. Write a note on cathodic protection. [5M] B. Explain the factors effecting rate of corrosion. [5M]	CO3 CO3	Level4 Level3
	OR		
18	Explain the mechanism of electro chemical corrosion. [10M]	CO3	Level2
19	Explain about coal analysis. [10M]	CO5	Level4
	OR		
20	Explain Bergius process for production of liquid hydrocarbon. [10M]	CO5	Level4