H.T No										

Sreenidhi Institute of Science and Technology
(An Autonomous Institution)

Regulations: A22

Code No: 9HC04 **Date: 21-Mar-2023 (FN)**

B.Tech I-Year I- Semester External Examination, March-2023 (Regular)
ENGINEERING CHEMISTRY (CSE, IT, CS, AI&ML, DS and IOT)

Time: 3 Hours **Max.Marks:60**

Note: *a) No additional answer sheets will be provided.*
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Missing data can be assumed suitably.

Bloom's Cognitive Levels of Learning (BCLL)

Remember	L1	Apply	L3	Evaluate	L5
Understand	L2	Analyze	L4	Create	L6

Part - A Max.Marks: 6x2=12

ANSWER ALL QUESTIONS, EACH QUESTION CARRIES 2 MARKS.

		BCLL	CO(s)	Marks
1	Distinguish between atomic and molecular orbitals.	L2	CO1	[2M]
2	What are thermosetting plastics?	L2	CO2	[2M]
3	What is phosphate conditioning? Write concerned chemical reactions.	L3	CO3	[2M]
4	State Nernst Equation.	L1	CO4	[2M]
5	List various surface treatments.	L1	CO5	[2M]
6	Write catalytic hydrogenation reaction.	L3	CO6	[2M]

Part – B Max.Marks: 6x8=48

ANSWER ALL QUESTIONS. EACH QUESTION CARRIES 8 MARKS.

			BCLL	CO(s)	Marks
7.	a)	Write the salient features of crystal field theory and explain the splitting of d-orbitals in octahedral complexes with a diagram,	L4	CO1	[8M]
		OR			
	b)	Calculate bond order and predict the magnetic property of F_2 molecule, with the help of Molecular Orbital Energy level Diagram.	L5	CO1	[8M]
8.	a)	i) Explain how natural rubber can be processed.	L2	CO2	[3M]
		ii) Discuss the process of vulacanization.			[5M]
		OR			
	b)	i) Classify lubricants.	L3	CO2	[3M]
		ii) Summarize the functions of lubricants.			[5M]
9.	a)	Describe how municipal water is treated before distribution.	L2	CO3	[8M]
		OR			
	b)	i) "The presence of sodium carbonate in boiler water causes caustic embrittlement to the inner walls of the boiler" Discuss.	L4	CO3	[4M]
		ii) Explain scale and sludge formation in boilers.			[4M]
10.	a)	Describe the construction and working of Hydrogen-Oxygen fuel cell. Mention its industrial applications.	Le	CO4	[8M]
		OR			
	b)	Calculate the Cell Potential of the electrochemical cell in which the cell reaction is: $Pb^{2+} + Cd \rightarrow Pb + Cd^{2+}$ Given that E^{o}_{cell} = 0.277 V, $[Cd^{2+}]$ = 0.02M, and $[Pb^{2+}]$ = 0.2M.	L5	CO4	[8M]

11.	a)	i) What is metal cladding?	L2	CO5	[4M]
		ii) Explain how a metal is protected by impressed current cathodic protection.			[4M]
		OR			
	b)	Explain the factors that influence rate of corrosion.	L2	CO5	[8M]
12.	a)	Discuss two different types of vibrations in a molecule, when IR radiation is absorbed. Mention selection rules of IR spectroscopy.	L2	CO6	[8M]
		OR			
	b)	Compare S_N1 and $S_N2$reactions with their mechanisms.	L4	CO6	[8M]

-- 00 -- 00 –