Course Code :22BC1101 R-2022

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING

(Autonomous)

Madhurawada, Visakhapatnam

Affiliated to Andhra University, Visakhapatnam.

B.Tech I-Semester Regular & Supplementary Examinations February 2024

Engineering Chemistry

(Common to CSE & CSE (AI & ML) & CSE (Data Science) & IT)

Date: 15-02-2024 Time: 3 Hours Max. Marks: 70

1. Answer ONE Question from each UNIT
2. All parts of a Question must be answered in one place to get valued.
3. All questions carry equal marks.

UNIT-I

1.	a)	Derive Nernst's equation for single electrode potential and explain the terms involved in it. Write its applications.	7 Marks
	b)	What are reference electrodes? Describe the construction of calomel electrode.	7 Marks
2.	a)	Distinguish between electrolytic cell and galvanic cell.	6 Marks
	b)	How can you determine the pH of the solution using glass electrode?	8 Marks

UNIT-II

3.	a)	What is battery? Explain the factors influencing emf of batteries?	6 Marks
	b)	What is a secondary cell? Explain the working of Lithium- ion battery and mention its applications.	8 Marks
4.	a)	What are fuel cells? Explain the reactions involved in Hydrogen-Oxygen fuel cell.	7 Marks
	b)	Describe the working of Zn-HgO cell.	7 Marks

UNIT-III

5.	a)	Discuss about electrical conductivity of intrinsic semiconductors.	6 Marks
	b)	Explain the different sources of renewable energy?	8 Marks
6.	a)	Discuss the working principle of photovoltaic cell.	7 Marks
	b)	Explain the manufacturing process of silicon photovoltaic cells by chemical vapour deposition method.	7 Marks

UNIT-IV

7.	a)	Define polymerization. Discuss the various types of polymerizations with suitable examples.	7 Marks
	b)	Explain the preparation properties and uses of Bakelite.	7 Marks
8	a)	What is vulcanization? How does it improve the properties of raw rubber?	7 Marks
	b)	Write the preparation, properties and applications of buna-N	7 Marks

UNIT-V

9	a)	Explain the applications of carbon nanotubes.	7 Mark
	b)	Discuss the synthesis of nanomaterials by reverse micellar method.	7 Mark
10	a)	Write a note on molecular switches.	7 Mark
	b)	Summarize the applications of nanomaterials in wastewater management.	7 Mark