

**PRAGATI ENGINEERING COLLEGE: SURAMPALEM  
(AUTONOMOUS)**

**I B.Tech I Semester Supplementary Examinations, July – 2024**

**APPLIED CHEMISTRY**

(Common to ECE, CSE(DS), CSE(AI&ML), CSE(AI))

Time: 3 hours

Max. Marks: 70

**Answer ONE Question from each Unit  
All Questions Carry Equal Marks**

Q. No.	Question	BTL	CO	Marks
<b>UNIT – I</b>				
1.	a) Derive Nernst's equation giving the EMF of a cell in terms of concentration of reactants and products of cell reaction.	K3	CO1	7M
	b) Illustrate the construction and working of Li-Ion Battery with neat sketch and relevant chemical equations.	K2	CO1	7M
<b>OR</b>				
2.	a) Illustrate the construction and working of standard hydrogen electrode and calomel electrode with neat sketch half-cell reactions.	K2	CO1	7M
	b) Illustrate the construction and working of Hydrogen-Oxygen Fuel cell with neat sketch and relevant chemical equations.	K2	CO1	7M
<b>UNIT – II</b>				
3.	a) What is solar cell? Explain the Construction and working of Photo Voltaic Cell.	K2	CO2	7M
	b) What is Ocean Thermal Energy Conversion (OTCE) and Explain how it is used to generate electricity?	K1	CO2	7M
<b>OR</b>				
4.	a) Briefly explain about Photo Galvanic cells.	K2	CO2	7M
	b) Define Non-conventional energy sources and explain about Hydropower and Geo-Thermal Power.	K1	CO2	7M
<b>UNIT – III</b>				
5.	a) What are Fullerenes? Discuss their properties and applications in various fields.	K1	CO3	7M
	b) Define Green chemistry and explain any 6 principals of Green chemistry.	K2	CO3	7M
<b>OR</b>				
6.	a) Sketch Arc Discharge method for synthesis of nonmaterial's.	K2	CO3	7M
	b) What are superconductors? Discuss their properties and applications.	K2	CO3	7M

UNIT – IV					
7.	a)	What are conducting polymers? Discuss the conduction mechanism of poly acetylene.	K4	CO4	7M
	b)	Write the preparation, properties and applications of Buna-N and Buna-S.	K2	CO4	7M
OR					
8.	a)	Write preparation, properties and uses of Bakelite and Nylon-6, 6.	K2	CO4	7M
	b)	Define functionality of monomer. Differentiate between thermoplastics and thermosetting plastics resins.	K3	CO4	7M
UNIT – V					
9.	a)	Discuss the Principle of Electronic Spectroscopy and Write any four its applications	K2	CO5	7M
	b)	What is Beer's-Lamberts Law? Derive the formula and discuss its limitations	K2	CO5	7M
OR					
10.	a)	Explain the different applications of Cyclodextrin based switches.	K2	CO5	7M
	b)	Discuss the Principle of Molecular vibration Spectroscopy and Write any four its applications	K2	CO5	7M