



CBCS SCHEME

BCHES102/202

USN									
-----	--	--	--	--	--	--	--	--	--

First/Second Semester B.E./B.Tech. Degree Examination,
Dec.2025/Jan.2026

Applied Chemistry for CSE Stream

Time: 3 hrs.

Max. Marks: 100

- Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.
3. VTU Formula Hand Book is permitted.*

Module – 1				M	L	C
Q.1	a.	What are electrochemical sensors? Explain the application in the measurement of dissolved oxygen.	7	L2	CO2	
	b.	What are quantum dot sensitized solar cells? Explain the working principle and applications.	7	L2	CO2	
	c.	Define Battery. Give the classification of batteries with example.	6	L1	CO1	
OR						
Q.2	a.	Explain the construction and working of Li-ion battery and mention any two advantages.	7	L2	CO1	
	b.	Explain the principle, working and application of conductometric sensors.	7	L2	CO1	
	c.	What are transducers and explain about disposable sensors?	6	L2	CO2	
Module – 2						
Q.3	a.	Explain the types of organic memory devices by taking p-type and n-type semiconducting material.	7	L2	CO1	
	b.	What are Liquid Crystals? Explain the classification of liquid crystals. Mention any two properties of liquid crystals.	7	L2	CO1	
	c.	Define optoelectronic devices. Mention any four properties and application of OLED.	6	L1	CO1	
OR						
Q.4	a.	What are memory devices? Explain the classification of electronic memory devices with example.	7	L2	CO1	
	b.	Discuss the working mechanism of liquid crystals in display system.	7	L2	CO1	
	c.	Discuss the use of polyimide polymeric material for organic memory device.	6	L2	CO4	

Module – 3

Q.5	a.	Define metallic corrosion. Describe the electrochemical theory of corrosion taking iron as an example.	7	L2	CO4
	b.	What are reference electrode? Explain the construction and working of calomel electrode. Mention its two applications.	7	L2	CO4
	c.	Explain the principle, instrumentation and working of conductometry using estimation of weak acid using strong base as an example.	6	L2	CO3

OR

Q.6	a.	Explain the corrosion control by anodization of aluminium and sacrificial anodic method for iron.	7	L2	CO1
	b.	Explain the construction and working of glass electrode.	7	L2	CO3
	c.	What is Galvanization? Explain the differential aeration corrosion by taking water line corrosion as example.	6	L1 L2	CO1

Module – 4

Q.7	a.	Explain the preparation, properties and application of Kevlar.	7	L2	CO3
	b.	What is green fuel? Explain the construction and working of photovoltaic cell.	7	L1 L2	CO1
	c.	Explain the synthesis and oxidative doping process of polyacetylene.	6	L2	CO4

OR

Q.8	a.	Define number average and weight average molecular weight of polymer. A polymer of polypropylene is found to have the composition $\left[\text{CH}_2 - \overset{\text{CH}_3}{\text{CH}} \right]_{300}, \quad \left[\text{CH}_2 - \overset{\text{CH}_3}{\text{CH}} \right]_{400} \quad \text{and} \quad \left[\text{CH}_2 - \overset{\text{CH}_3}{\text{CH}} \right]_{500}$ with 20%, 30% and 50% respectively in a polymer material. Calculate the number and weight average molecular mass of the polymer.	7	L2	CO5
	b.	What are conducting polymer? Explain the reductive doping of polyacetylene. Mention the two application of conducting polymer.	7	L1 L2	CO2
	c.	What is Green Hydrogen? Explain the proton exchange membrane electrolysis. Mention its advantage.	6	L1 L2	CO4

Module – 5

Q.9	a.	Discuss the role of following in recovery of metals from E-waste i) Pyrometallurgy ii) Hydrometallurgy	7	L2	CO2
	b.	Mention the sources of E-waste, explain the need of E-waste management.	7	L1	CO1
	c.	Explain the direct recycling of E-waste.	6	L2	CO2

OR

Q.10	a.	Explain the adverse effects of toxic materials used in manufacturing electrical and electronic products.	7	L2	CO2
	b.	What is E-waste? Explain the advantages of recycling and recovery of E-wastes.	7	L1 L2	CO2
	c.	Explain the extraction of gold from E-wastes. Mention the advantages.	6	L2	CO2
