



First/Second Semester B.E./B.Tech. Degree Examination, June/July 2025

Applied Chemistry for CSE Stream

Max. Marks: 100

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

Module – 1				M	L	C
Q.1	a.	What are optical sensors? Explain the principle and application of optical sensor in the colorimetric estimation of copper.	07	L2	CO1	
	b.	What are electrochemical sensors? Describe the application of electrochemical sensor in the estimation of dissolved oxygen.	07	L2	CO1	
	c.	Explain the construction and working of Lithium-ion battery. Mention its advantages and applications.	06	L2	CO1	
OR						
Q.2	a.	What are Sensors? Explain the application of electrochemical sensor for sensing of NO_x .	07	L2	CO1	
	b.	What are Batteries? Explain their classification with suitable examples.	07	L2	CO1	
	c.	Explain the application of electrochemical sensor in the determination of diclofenac.	06	L2	CO1	
Module – 2						
Q.3	a.	What are Memory Devices? Explain the types of electronic memory devices.	07	L2	CO2	
	b.	What are Liquid Crystals? Describe their classification with examples.	07	L2	CO2	
	c.	What are OLEDs? Mention any four properties and applications of OLEDs.	06	L1	CO2	
OR						
Q.4	a.	Illustrate p-type and n-type organic memory devices with example.	07	L2	CO2	
	b.	What are photoactive and electroactive materials? Describe their working principle in the display system.	07	L2	CO2	
	c.	What are QLEDs? Mention any four applications and properties of QLEDs.	06	L1	CO2	
Module – 3						
Q.5	a.	What is Metallic Corrosion? Explain electrochemical theory of corrosion of iron.	07	L2	CO3	
	b.	Describe Galvanizing. Mention its applications.	07	L2	CO3	
	c.	What are concentration cells? Represent a concentration cell formed by two copper rods in contact with CuSO_4 solutions. The concentration of CuSO_4 solutions. The concentration of CuSO_4 in one half cell is hundred times more concentrated than the other. Write the reactions and find the cell voltage at 300 K. Given $F = 96500 \text{ C}$ and $R = 8.314 \text{ J/K/mole}$.	06	L3	CO3	

OR

Q.6	a.	What is CPR? A steel plate of an area of 200 in^2 was exposed to moist air. After a period of one year, 500 g was lost due to corrosion. The density of steel = 7.9 g/cm^3 . Calculate CPR in mpy and mmpy.	07	L3	CO3
	b.	What are Reference Electrodes? Explain the construction and working principle of Calomel Electrode. Mention its advantages.	07	L2	CO3
	c.	Describe how a weak acid is estimated by conductometric titration.	06	L2	CO3

Module – 4

Q.7	a.	What are Conducting Polymers? Explain the mechanism of conduction of polyacetylene.	07	L2	CO4
	b.	Explain the synthesis of Kevlar with a chemical reaction. Mention its properties and applications.	07	L2	CO4
	c.	Explain the production of hydrogen by PEM electrolyzer.	06	L2	CO4

OR

Q.8	a.	What are Polymers? A polymer sample contains 1, 2, 3 and 4 molecules having molecular weight 10^5 , 2×10^5 , 3×10^5 and 4×10^5 respectively. Calculate the number average and weight average molecular weight of the polymer.	07	L3	CO4
	b.	What are Photovoltaic Cells? Describe the construction and working of PV cells. Mention its advantages and disadvantages.	07	L2	CO4
	c.	What are Green fuels? Explain the production of Hydrogen by alkaline electrolyzer.	06	L2	CO4

Module – 5

Q.9	a.	Explain the sources, composition and characteristics of e-waste and need for the e-waste management.	07	L2	CO5
	b.	Describe hydrometallurgical and pyrometallurgical extraction.	07	L2	CO5
	c.	What is e-waste? Explain the health hazards caused by the exposure to e-waste.	06	L2	CO1

OR

Q.10	a.	Describe how gold is extracted from e-waste.	07	L2	CO5
	b.	Explain the various steps involved in e-waste management.	07	L2	CO5
	c.	Explain briefly the role of producers, consumers and recyclers in e-waste management.	06	L1	CO5
