



CBCS SCHEME

BCHEC102/202

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

Applied Chemistry for Civil Engineering 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				
Q.1	a.	Describe the manufacture of cement by wet method.	7	L1 CO1
	b.	Define Refractories. Mention the properties and applications of refractories materials.	7	L2 CO1
	c.	Explain the properties and applications of Iron and its alloys.	6	L1 CO1
OR				
Q.2	a.	Describe the preparation of soda lime glass.	7	L1 CO1
	b.	Explaining the testing of cement by EDTA Method.	7	L2 CO1
	c.	Explain the properties and applications of aluminium and its alloys.	6	L1 CO1
Module – 2				
Q.3	a.	Illustrate the construction and working of photovoltaic cell.	7	L1 CO2
	b.	Define Secondary Batteries. Explain the construction and working of Li-ion battery.	7	L2 CO2
	c.	Discuss the following types of corrosion i) Differential Metal corrosion ii) Differential Aeration Corrosion.	6	L2 CO2
OR				
Q.4	a.	Explain the electrochemical corrosion of steel in concrete.	7	L1 CO2
	b.	Describe the following corrosion control methods: i) Galvanizing ii) Sacrificial Anode	7	L2 CO2
	c.	Explain the construction and working of methanol oxygen fuel cell.	6	L1 CO2

Q.5	a.	Describe the estimation of chemical oxygen demand of sewage water solution.	7	L1	CO3
	b.	Explain the determination of total hardness by using EDTA solution.	7	L1	CO3
	c.	Define Nanomaterials. Explain the synthesis of Nanomaterials by Sol-gel method.	6	L2	CO3
OR					
Q.6	a.	Explain the size dependent properties of nanomaterials: i) Surface area ii) Catalytic property	7	L1	CO3
	b.	Write a note on carbon nanotubes. Mention its properties and applications of carbon nanotubes.	7	L2	CO3
	c.	Define COD. In a COD test, 30.2 cm ³ and 14.5 cm ³ of 0.04 N FAS solutions are required for a blank and sample titration respectively. The volume of sample used was 25 cm ³ . Find the COD of the sample solution.	6	L3	CO3
Module – 4					
Q.7	a.	Explain the synthesis, properties and applications of chloropolyvinyl chloride.	7	L1	CO4
	b.	Explain the synthesis, properties and applications of nylon fibers.	7	L1	CO4
	c.	Mention the properties and applications of fiber reinforced polymer composites.	6	L2	CO4
OR					
Q.8	a.	Define Biodegradable Polymers. Explain the synthesis and applications of polylactic acid.	7	L2	CO4
	b.	Define the following terms: i) Addition Polymerization ii) Condensation Polymerization	6	L1	CO4
	c.	A polymer sample contains 1, 2, 3, and 4 molecules having molecular weights 1×10^5 , 2×10^5 , 3×10^5 and 4×10^5 , respectively. Calculate the number average and weight average molecular weight of the polymer.	7	L3	CO4
Module – 5					
Q.9	a.	Define the following terms with examples: i) Phase ii) Component iii) Degrees of freedom	7	L1	CO5
	b.	With the help of neat phase diagram, describe the Lead-Silver system.	7	L2	CO5
	c.	Explain the determination of pH of soil sample using pH sensors.	6	L2	CO5
OR					
Q.10	a.	Illustrate the principle and instrumentation of potentiometric sensors.	7	L1	CO5
	b.	Describe the instrumentation and applications of conductometric sensors.	7	L2	CO5
	c.	What is Phase Rule? Explain the terms involved in it with examples.	6	L1	CO5
