LIBRARY BANGALORE

CBCS SCHEME

USN | | | | | | | | | | |

BCHEC102/202

First/Second Semester B.E/B.Tech. Degree Examination, June/July 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	M	L	C
1	a.	Write the Composition of Glass. Describe the preparation of soda-lime glass and give any two applications.	7	L2	CO1
	b.	Explain the testing of cement by EDTA Method.	7	L3	CO2
	c.	What are Alloys? Explain the properties and applications of aluminium and its alloys.	6	L2	CO3
		OR			
2	a.	What is the composition of cement? Explain the manufacturing process of cement.	7	L2	CO1
	b.	Define Refectories. Explain its types based on chemical composition.	7	L2	CO2
	c.	Write a note on the Setting and Hardening process of cement.	6	L3	CO3
		Module – 2			
3	a.	Define Photovoltaic Cell. Explain the construction and working of a PV cell.	7	L2	CO1
	b.	Define corrosion. Explain the electrochemical theory of corrosion of steel in concrete.	7	L2	CO2
	c.	Explain : i) Stress corrosion ii) Galvanization.	6	L3	CO3
		OR			
4	a.	Define Battery. Explain the construction and working of Li-ion battery.	7	L3	CO2
	b.	What are Fuel cells? Explain the construction and working of methanol-oxygen fuel cell.	7	L2	CO3
	c.	What is Anodizing? Explain anodizing process.	6	L2	CO1

VTU-07-07-2026 08:45:19am EP - EP - EP -

		Module – 3			
5	a.	Explain the determination of temporary, permanent and total hardness of water by EDTA method.	**7**	**L3**	**CO5**
	b.	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 samples used was 25 cm^3. Find the COD of the sample solution.	**6**	**L2**	**CO3**
	c.	Explain the synthesis of nano materials by Sol-Gel Method.	**7**	**L1**	**CO4**
		OR			
6	a.	Define COD. Explain the determination of COD of waste water sample.	**7**	**L1**	**CO3**
	b.	Explain the process of forward osmosis and give any two applications.	**7**	**L2**	**CO4**
	c.	What is Desalination? Explain the desalination of water by electrodialysis method.	**6**	**L3**	**CO5**
		Module – 4			
7	a.	What are Polymer Composites? Explain the properties and application of fiber Reinforced Polymer Composites (FRPC).	**7**	**L2**	**CO3**
	b.	Explain the synthesis, properties and applications of Chloro Polyvinyl Chloride (CPVC).	**7**	**L2**	**CO4**
	c.	What is Geopolymer Concrete? Explain the synthesis of geopolymer concrete.	**6**	**L3**	**CO1**
		OR			
8	a.	A polymer sample contains 100, 200, 300 and 400 molecules having molecular mass 1000, 2000, 3000 and 4000 respectively. Calculate the number average and weight average molecular masses of the polymer.	**6**	**L1**	**CO3**
	b.	What are Biodegradable Polymers? Explain the synthesis and applications of polylactic acid.	**7**	**L1**	**CO1**
	c.	What are Adhesives? Give any two properties and applications of epoxy resin.	**7**	**L2**	**CO4**

		Module – 5			
9	a.	Define Phase Rule. With the help of a neat phase diagram, describe the lead-silver system.	**7**	**L1**	**CO2**
	b.	Explain the estimation of acid mixture using strong acid by conductometric sensors.	**7**	**L3**	**CO5**
	c.	Define the following terms with examples : i) Phase ii) Component iii) Define of freedom.	**6**	**L3**	**CO5**
		OR			
10	a.	Explain the Theory and Instrumentation of conductometric sensor.	**7**	**L2**	**CO2**
	b.	Explain the principle, instrumentation and the application of potentiometric sensor in the estimation of iron.	**7**	**L3**	**CO5**
	c.	Explain the determination of pH of soil sample using pH sensor.	**6**	**L3**	**CO5**

* * * * *

VTU-07-07-2026 08:45:19am
07-07-2026 09:01:07am
EP - EP - EP -