CBCS SCHEME

USN 4 V

BCHES102/202

First/Second Semester B.E./B.Tech. Degree Examination, Dec.2023/Jan.2024
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. VTU Formula Hand Book is permitted.
3. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain the working principle of conductometric sensors and mention any two applications.	06	L2	CO2
	b.	Discuss the construction and working of Li-ion batteries. Mention its applications.	07	L2	CO4
	c.	Describe the application of Electrochemical gas sensors for the detection of SO_x and NO_x.	07	L3	CO3
		OR			
Q.2	a.	Explain the working principle of an Electrochemical sensor in the detection of Dissolved Oxygen (DO).	06	L2	CO2
	b.	Discuss the construction and working of Quantum Dot Sensitized Solar Cells (QDSSCs). Mention its applications.	07	L2	CO4
	c.	Describe the use of disposable sensor in the detection of herbicide Glyphosate.	07	L3	CO3
		Module – 2			
Q.3	a.	What are memory devices? Explain the classification of Electronic memory devices with examples.	07	L1 L2	CO1
	b.	What are nanomaterials? Explain any four properties of polythiophenes (P_3HT) suitable for optoelectronic devices.	07	L1 L2	CO1 CO4
	c.	Mention any three properties and applications of QLED.	06	L1	CO4
		OR			
Q.4	a.	Explain the types of organic memory. Devices by taking p-type and n-type semiconductor materials.	07	L2	CO2
	b.	What are photoactive and electroactive materials and explain their working principle in the display system.	07	L2	CO1 CO2
	c.	Mention any 3 properties and applications of LC-displays.	06	L1	CO4
		Module – 3			
Q.5	a.	Define metallic corrosion. Describe the electrochemical theory of corrosion taking.	07	L1 L2	CO1 CO2
	b.	Describe galvanizing and mention its applications.	06	L2	CO4
	c.	What is CPR? A thick brass sheet of area 400 inches exposed to moist air. After 2 years of period. It was found to experience a weight loss of 375 g due to corrosion. If the density of brass is 8.73 g/cms, calculate CPR in mpy and mmpy.	07	L2	CO1 CO3
		OR			
Q.6	a.	Explain the construction and working of the Calomel electrode.	07	L2	CO2
	b.	Explain the application of conductometric electrodes in the estimation of a weak acid.	06	L2	CO4
	c.	Define concentration cell. Derive an expression for emf of the cell.	07	L1 L2	CO1 CO3

		Module – 4			
Q.7	**a.**	A polydisperse sample of polystyrene is prepared by mixing three monodisperse samples in the following proportions. 1 g of 10000 molecular weight. 2 g of 50000 mol. wt and 2 g of 100000 mol.wt. Determine the number and weight average mol. wt.	**07**	**L2**	**CO3**
	b.	What is Green fuel (hydrogen fuel)? Mention the advantages of Green fuel.	**06**	**L1**	**CO1**
	c.	Explain the construction and working of Photovoltaic cells.	**07**	**L2**	**CO2**
		OR			
Q.8	**a.**	Discuss the conduction mechanism in polyacetylene through oxidative or reductive doping techniques (Any one).	**07**	**L3**	**CO2**
	b.	Explain the generation of hydrogen by alkaline water electrolysis.	**07**	**L2**	**CO4**
	c.	Explain the preparation, properties and applications of Kevlar.	**06**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	What is e-waste? Explain the need for e-waste management.	**07**	**L2**	**CO1**
	b.	Explain the process of recycling e-waste.	**06**	**L2**	**CO5**
	c.	Discuss the following : (i) Pyrometallurgy (ii) Hydrometallurgy	**07**	**L3**	**CO5**
		OR			
Q.10	**a.**	Explain the extraction of gold from e-waste.	**07**	**L2**	**CO2**
	b.	Write a brief note on the role of stakeholders for example: Producers, Consumers, Statutory bodies.	**07**	**L3**	**CO5**
	c.	Explain the health hazards due to exposure to e-waste.	**06**	**L2**	**CO3**

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