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EPCHS102/202

**First/Second Semester B.E. Degree Examination, July 2025****APPLIED CHEMISTRY FOR CSE STREAM**

TIME:3 hrs.

Max.Marks:100

*Note: 1. Answer any FIVE full questions, choosing ONE question from each MODULE**2. Formula Hand Books Permitted**3. M: Marks, L: Bloom's level, C: Course outcomes.*

Module-1			M	L	C
Q.1	a	Discuss the principle and working of conductometric sensor with applications.	7	L3	CO1
	b	What are sensors? Explain the measurement of dissolved oxygen by optical and electrochemical sensor.	7	L2	CO1
	c	List the types of electrodes? Discuss the construction and working of glass electrode.	6	L3	CO1
OR					
Q.2	a	What is reference electrode? Illustrate the construction and working of calomel electrode.	7	L3	CO1
	b	Define pH. Discuss the measurement of pH using glass electrode with example.	7	L2	CO1
	c	Discuss the construction and working of flame photometry.	7	L3	CO1
Module-2					
Q.3	a	What are liquid crystals? Discuss the properties and applications of liquid crystals.	7	L2	CO2
	b	What are memory device? Explain the mechanism of electronic memory device.	7	L2	CO2
	c	Illustrate the properties and application of Organic Light Emitting Diodes.	6	L3	CO2
OR					
Q.4	a	What are photoactive materials? Give examples and their role in optoelectronic devices.	7	L3	CO2
	b	Discuss the properties and applications of quantum light emitting diodes.	7	L3	CO2
	c	Explain the mechanism of organic memory devices and their working principle.	6	L3	CO2
Module-3					
Q.5	a	Explain the electrochemical theory of corrosion of iron.	7	L3	CO3
	b	Explain the galvanization process of iron for corrosion control.	7	L3	CO3
	c	Discuss the construction and working of lithium ion battery.	6	L3	CO3

**OR**

<b>Q.6</b>	<b>a</b>	Illustrate the principle and working of potentiometry.	<b>7</b>	<b>L3</b>	<b>CO3</b>
	<b>b</b>	Discuss the differential metal corrosion and differential aeration corrosion with example.	<b>7</b>	<b>L2</b>	<b>CO3</b>
	<b>c</b>	Describe the construction and working of sodium ion battery.	<b>6</b>	<b>L3</b>	<b>CO3</b>

**Module-4**

<b>Q.7</b>	<b>a</b>	Discuss the synthesis, properties and applications of Kevlar.	<b>7</b>	<b>L3</b>	<b>CO4</b>
	<b>b</b>	Explain the synthesis and conduction mechanism of polyacetylene.	<b>7</b>	<b>L3</b>	<b>CO4</b>
	<b>c</b>	What is solar cell? Discuss the working and applications of solar cell.	<b>6</b>	<b>L3</b>	<b>CO4</b>

**OR**

<b>Q.8</b>	<b>a</b>	Explain the principle, properties and applications of quantum dot sensitized solar cells.	<b>7</b>	<b>L3</b>	<b>CO4</b>
	<b>b</b>	Illustrate the generation of green hydrogen by electrolysis of water and its advantages.	<b>7</b>	<b>L3</b>	<b>CO4</b>
	<b>c</b>	Explain the determination of molecular weight by the number average method.	<b>6</b>	<b>L3</b>	<b>CO4</b>

**Module-5**

<b>Q.9</b>	<b>a</b>	What is e-waste? Provide examples of electronic items that contribute to e-waste.	<b>7</b>	<b>L3</b>	<b>CO5</b>
	<b>b</b>	What are the toxic materials used in the manufacturing of electronic and electrical products?	<b>7</b>	<b>L3</b>	<b>CO5</b>
	<b>c</b>	Discuss the role of recyclers in the sustainable disposal of e-waste.	<b>6</b>	<b>L3</b>	<b>CO5</b>

**OR**

<b>Q.10</b>	<b>a</b>	What types of batteries contribute to battery waste? Discuss the challenges in battery management.	<b>7</b>	<b>L3</b>	<b>CO5</b>
	<b>b</b>	Discuss how product design and extended producer responsibility (EPR) can promote a circular economy in electronics.	<b>7</b>	<b>L3</b>	<b>CO5</b>
	<b>c</b>	Describe the physical and chemical characteristics of e-waste that make its disposal challenging.	<b>6</b>	<b>L3</b>	<b>CO5</b>

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