Visvesvaraya Technological University, Belagavi

Model Question Paper-1 with effect from 2022

Computer Science & Engg. Stream (CBCS Scheme)

First /Second Semester Engineering Degree Examination

USN: | | | | | | | | | | |

Subject Title: Chemistry for Computer Science & Engineering Stream 22CHES12/22

TIME: 03 Hours **Max. Marks:** 100

Note: Answer FIVE full questions, choosing one full question from each module

		MODULE 1	Marks
1	a	Explain the working principle of Conductometric sensors (conductometry), and Optical sensors (colorimetry)	7
	b	What are Electrochemical Sensors? Explain its application in the measurement of Dissolved Oxygen (DO)	7
	c	Describe the construction, working and applications of Lithium-ion batteries and mention any four applications	6
		OR	
2	a	Explain the working principle of Electrochemical sensors, and mention its applications	6
	b	Describe the application of Electrochemical gas sensors in sensing SOx and NOx	7
	c	What are Quantum Dot Sensitized Solar Cells (QDSSC's)? Explain the working Principle, Properties and Applications.	7
		MODULE 2	
3	a	Explain the types of organic memory devices by taking p-type and n-type semiconductor materials	7
	b	What are photoactive and electroactive materials and explain their working principle in display system	6
	c	What are nanomaterials? Explain any four properties of Polythiophenes (P3HT) suitable for optoelectronic devices.	7
		OR	
4	a	What are Memory Devices? Explain the Classification of electronic memory devices with examples	6
	b	Mention any four properties and applications of LC-displays	7
	c	Mention any four properties and applications of QLED	7
		MODULE 3	
5	a	Define metallic corrosion? Describe the electrochemical theory of corrosion taking iron as an example.	7
	b	Explain: (i) Differential metal corrosion & (ii) Water-line corrosion	6
	c	Describe galvanizing and mention its applications.	7
		OR	
6	a	Explain: i) corrosion control by Anodization & ii) Sacrificial anodic method.	6
	b	Explain the construction and working of Calomel electrode	7
	c	What is CPR? A thick brass sheet of area 400 $inch^2$ is exposed to moist air. After 2 years of period, it was found to experience a weight loss 375 g due to corrosion. If the density of brass is 8.73 g/cm^3. Calculate CPR in mpy and mmpy.	7

MODULE 4			
7	a	A polydisperse sample of polystyrene is prepared by mixing three monodisperse samples in the following proportions. 1g of 10000 molecular weight, 2g of 50000 molecular weight and 2g of 100000 molecular weight. Determine number average and weight average molecular weight. Find the index of polydispersity.	7
	b	Explain the synthesis of Polyacetylene and mention its applications	7
	c	Explain the generation of hydrogen by Alkaline water electrolysis	6
OR			
8	a	Describe the hydrogen production by photo catalytic water splitting method.	7
	b	Preparation, properties, and commercial applications of Kevlar.	7
	c	Explain the construction and working of photovoltaic cells.	6
MODULE 5			
9	a	Mention the sources of e-waste and explain the need for e-waste management	7
	b	Explain the recycling of e-waste	7
	c	Explain the extraction of gold from e-waste	6
OR			
10	a	Explain the ill effects of toxic materials used in manufacturing electrical and electronic products	7
	b	Explain the pyrometallurgical and direct recycling methods.	6
	c	Write a brief note on role of stakeholders for example; producers, consumers, recyclers, and statutory bodies.	7