

USN

First/Second Semester B.E/B.Tech. Degree Examination, June/July 2024 Chemistry for EEE 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 databook is permitted

		Module – 1	M	T.	С
1	a.	Explain classification of materials as conductors, insulators and	7	L2	CO1
	۵.	semiconductors with the help of band theory.	,		
	b.	Explain the preparation, properties and commercial applications for grapheme	7	L2	CO1
		oxide.			
	c.	Describe the purification of electronic grade silicon from quartz by float zone	6	L2	CO1
		method.			
		OR			
2	a.	What are conducting polymers? Explain the mechanism of conduction in	7	L2	CO1
		polyethylene.			
	b.	What is electroless plating? Describe the electroless plating of copper in the	7	L2	CO ₁
		manufacture of double-sided PCB.			
	c.	A polymer has the following composition 100 molecules of molecular mass	6	L3	CO ₁
i.		1000 g/mol, 200 molecules of molecular mass 2000g/mol, and 500 molecules			
		of molecular mass 5000g/mol. Calculate the number and weight average			
		molecular weight.			
		Module – 2			
3		What are Batteries? Explain the classification of batteries with suitable	-	12	CO1
3	a.	examples.	6	L2	CO ₂
	b.	Explain the construction and working of sodium-ion battery. Mention its	7	L2	CO2
	0.	applications.	,	LL	COZ
	c.	Explain the construction and working of vanadium flow battery. Mention its	7	L2	CO2
		applications.			
		OR			
4	a.	What are photovoltaic cells? Describe the construction and working of a PV	7	L2	CO2
		cell. Mention its advantages and disadvantages.			
	b.	What are fuel cells? Explain the construction and working of methanol –	6	L2	CO2
		oxygen fuel cell.			
	c.	Explain the construction and working of lithium – polymer battery. Mention	7	L2	CO2
		its application.			
		Module – 3		1	Г
5	a.	Define corrosion? Explain the electro chemical theory of corrosion taking iron	7	L2	CO ₃
		as an example.			
	b.	Explain the differentiate metal differential aeration corrosion with an example.	7	L2	CO3
	c.	Calculate the CPR in both MPY and MMPY for a thick steel sheet of area 100	6	L3	CO3
		inch ² which experience a weight loss of 485g after one year. (Density of steel			
		$= 7.9 \text{g/cm}^3$).			
		1 of 2			

BCHEE102/202

b. Write a note on: i) Galvanizing ii) Sacrificial anode method. c. What is e-waste? Describe the effects of e-waste on environment and human health. Module - 4 7 a. Describe the synthesis of nano-materials by sol-gel method with example. b. Write a note on nanofibers and nanosensors. 7 I. c. What are QLED? Mention its properties along with their applications. OR 8 a. Describe the synthesis of nano-materials by co-precipitation method with an example. b. What are nano-materials? Explain any two size dependent properties of nanomaterials. c. What are OLED's? Mention its properties and applications. 6 I. Module - 5 9 a. What are reference electrodes? Explain the construction and working of calomel electrode. b. Explain the working principle and applications of conductometric sensor. c. What are concentration cells? A concentration cell is constructed by immersing two iron electrodes in 0.01m and 0.1m Fe SO ₄ solution represent the cell and calculate EMF of the cell at 298K. OR 10 a. What are ion-selective electrodes? Explain the construction and working 7 I.	.2 C
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