

NAGARJUNA COLLEGE OF ENGINEERING AND TECHNOLOGY**Department of Chemistry****Odd Semester 2023-24****Internal Assessment Test – II****Section: F&G**

Course Name: Applied Chemistry for CSE	Course Code: 23CHES12	Semester: I
Date: 30/12/2023	Time: 11.00am-12.00pm	Max. Marks: 25

[Note: Answer any THREE full questions as indicated below]

Sl. No	QUESTIONS		COs	RBT Levels	Marks
1.	a)	Explain the types of organic molecules used in memory devices?	CO5	L2	04M
	b)	What are QD-LED's? Write the properties & applications of QD-LED's.	CO5	L3	06M
OR					
2.	a)	Write the salient features of Smectic liquid crystals.	CO5	L2	04M
	b)	Explain the types of polymeric molecules used in memory devices?	CO5	L3	06M
3.	a)	Mention the hazardous chemicals present in e-waste.	CO4	L2	04M
	b)	Explain direct recycling of e-waste.	CO4	L3	06M
OR					
4.	a)	What is the role of statutory bodies and producers in the management of e-waste.	CO4	L2	04M
	b)	Explain the chemical leaching methods or hydrometallurgical methods used in e-waste recycling.	CO4	L3	06M
5.		Explain the steps involved in extraction of gold from e-waste.	CO5	L1	05M
OR					
6.		What is an e-waste? Explain the effects of e-waste on environment and human health.	CO4	L1	05M

Nagarjuna College of Engineering & Technology (Autonomous Institute Affiliated to VTU) First Semester BE Degree SE Examination, January 2024 Applied Chemistry for Computer Science and Engineering stream Time: 3Hrs. Max. Marks: 100				
Note: Answer any one full questions from each module				
Module - 1				
1a	Explain the construction and working of calomel electrode.	COs	M	I
b	What are the special properties of lithium that makes it advantages to use as an electrode material? Write the construction, charging and discharging reactions of lithium ion battery.	CO1	6	I
c	What are quantum dot sensitized solar cells? Explain the working principle, properties and applications of QDSSC'S.	CO1	7	I
OR				
2a	Define the following terms:	CO1	6	L
	i) Standard electrode potential ii) Electrolyte concentration cell iii) Battery			
b	How formation of p-n junction diode helps in converting solar energy into electrical energy? Explain it.	CO1	7	L3
c	An electrolyte concentration cell consists of two Cu electrodes immersed in copper sulphate solutions of 0.4 M and 1.0 M concentrations respectively. Give the cell representation, cell reaction and calculate the EMF of the cell at 25°C.	CO1	7	L3
Module - 2				
3a	Write any three major environmental pollutants with types, sources and its ill effects on humans and environment.	CO2	6	L2
b	What is soft water? Explain ion exchange method of softening of water.	CO2	7	L3
c	Justify, why water will not produce lather readily with soap? Explain the procedure for the determination of hard water by complexometric method using EDTA.	CO2	7	L3
OR				
4a	Write the reaction steps involved in the synthesis of paracetamol through green route.	CO2	6	L2
b	Define COD. Calculate the COD of an effluent sample, when 30 cm ³ of an effluent requires 8.5 cm ³ of 0.002M K ₂ Cr ₂ O ₇ for oxidation.	CO2	7	L3
c	What is Desalination? Explain the purification of water by forward osmosis with neat labelled diagram.	CO2	7	L3
Module - 3				
5a	Explain any two types of electronic memory device.	CO5	6	L2
b	What are lyotropic liquid crystals? Write the salient features of nematic liquid crystals.	CO5	7	L3
c	Define the term OLED's. Write the properties & applications of OLED's.	CO5	7	L2
OR				
6a	How the electric field & light influence on the liquid crystals? Explain it with a neat labelled diagram.	CO5	6	L3
b	What are QD-LED's? Write the properties & applications of QD-LED's.	CO5	7	L2
c	What are photoactive & electro active materials? Write the properties and types of organic molecules used in optoelectronic devices.	CO5	7	L2
Module - 4				
7a	Define the following terms: i) E-waste ii) Hydrometallurgy iii) Pyro metallurgy	CO4	6	L2
b	What is the composition of e-waste? Mention the hazardous chemicals present in e-waste.	CO4	7	L2
c	Write the various steps involved in extraction of gold from e-waste.	CO4	7	L3
OR				

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| 8a | Write the sources and causes of e-waste. | CO4 | 6 | L2 |
| b | Explain any two pyro metallurgical methods used in e-waste recycling. | CO4 | 7 | L3 |
| c | What are the role of producers and consumers in the management of e-waste? | CO4 | 7 | L2 |

Module - 5

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|----|--|-----|---|----|
| 9a | How electrochemical gas sensors are used in the detection of NO_x . | CO3 | 6 | L3 |
| b | What is a chemical sensor? Explain the functions of components present in a sensor. | CO3 | 7 | L2 |
| c | Define specific conductance. Draw the graph and explain the conductometric titration for weak acid with strong base. | CO3 | 7 | L2 |

OR

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|-----|--|-----|---|----|
| 10a | Explain the working principle & applications of an optical sensor. | CO3 | 6 | L2 |
| b | How potentiometric titrations are useful in the estimation of end point in redox titrations, explain it with suitable example. | CO3 | 7 | L3 |
| c | What are disposable sensors? Explain how disposable sensors are used in the detection of biomolecules. | CO3 | 7 | L2 |