**VR23** Reg. No: | | | | | | | | | | |

VELAGAPUDI RAMAKRISHNA

# SIDDHARTHA ENGINEERING COLLEGE

**(AUTONOMOUS)**

I/IV B.Tech. DEGREE EXAMINATION, JUNE - 2024

23BS1102B/2102B CHEMISTRY

(Regular branches of AI&DS,CSE(AI&ML),CSE & IT and Supplementary branches of ECE,EEE&EIE)

***Time: 3 hours*** ***Max. Marks: 70***

***Part-A is compulsory***

***Answer One Question from each Unit of Part - B***

***Answer to any single question or its part shall be written at one place only***

## PART-A

**5 x 2 = 10M**

1. a. Give the importance of de-Broglie relation. **(CO1 K2)**

   b. Why do electrochemical cells stop working after some time? **(CO2 K2)**

   c. Teflon is a addition polymer, but behaves like a thermosetting polymer. Give reason. **(CO3 K2)**

   d. What is the wavelength range of electromagnetic wave and name different forms of electromagnetic wave? **(CO4 K2)**

   e. Give the flow chart for the classification of nanomaterials. **(CO5 K2)**

## PART-B

4 x 15 = 60M

### UNIT-I

2. a. Explain the energy level diagrams of Benzene and Butadiene. **(CO1 K2) 7M**
   b. Which of the following two molecules has a higher bond length: i) $O_2$ ii) $O_2^+$. Explain using molecular orbital theory. **(CO1 K3) 8M**

(or)

3. a. What are semiconductors? Explain the conduction of n-type and p-type semiconductors with suitable applications. **(CO1 K3) 7M**
   b. Discuss in brief the classification of super capacitors with relevant applications. **(CO1 K2) 8M**

### UNIT-II

4. a. Differentiate between ampere metric and potentio metric sensors with examples. **(CO2 K3) 7M**
   b. Explain the four different types of conducto metric titrations with relevant graphs. **(CO2 K2) 8M**

(or)

5. a. Define primary battery. Explain the construction, working mechanism of zinc air battery. **(CO2 K2) 7M**
   b. Discuss about the construction of Li ion battery with charging, discharging reactions and mention the advantages and applications. **(CO2 K3) 8M**



### UNIT-III

6. a. Explain the mechanism of step growth polymerization. **(CO3 K2) 7M**
   b. Discuss the preparation , properties and applications of Bakelite. **(CO3 K2) 8M**

(or)

7. a. Explain with examples the terms addition, condensation and copolymerization. **(CO3 K2) 7M**
   b. What are biodegradable polymers? Explain the structure properties and applications of any one biodegradable polymer. **(CO3 K3) 8M**

### UNIT-IV

8. a. Define infrared spectroscopy. Describe the various molecular vibrations in this technique. **(CO4 K2) 7M**
   b. What is spectrophotometry? Discuss the principle and working of a spectrophotometer with the help of a schematic diagram. **(CO4 K3) 8M**

(or)

9. a. Discuss in brief the properties and applications of fullerenes and graphene. **(CO5 K2) 7M**
   b. Write short notes on: i) Selection rule ii) Types of vibrations. **(CO4 K2) 8M**

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