

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech I Year I Semester Regular Examinations February-2024
CHEMISTRY

(Common to CSM, CIC, CAD, CCC & CAI)

Time: 3 Hours

Max. Marks: 70

PART-A

(Answer all the Questions 10 x 2 = 20 Marks)

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| 1 | <p>a Define Bond Order.</p> <p>b What is HOMO and LUMO?</p> <p>c What are Super Conductors? Give two examples.</p> <p>d List out any two applications of Fullerenes.</p> <p>e Differentiate Primary and Secondary batteries.</p> <p>f What is Oxidation & Reduction potential ?</p> <p>g Define Addition polymerization. Give two examples.</p> <p>h Give one method for preparation of Buna-N rubber.</p> <p>i State Beer-Lambert's Law. Mention the terms involved.</p> <p>j Define Chromatography.</p> | <p>CO1 L1 2M</p> <p>CO1 L1 2M</p> <p>CO2 L1 2M</p> <p>CO2 L1 2M</p> <p>CO3 L2 2M</p> <p>CO3 L1 2M</p> <p>CO4 L1 2M</p> <p>CO4 L2 2M</p> <p>CO5 L1 2M</p> <p>CO5 L1 2M</p> |
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PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

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| 2 | <p>a Explain de Broglie's dual nature of hypothesis.</p> <p>b What is ψ ? Explain the significance of the Ψ and Ψ^2</p> | <p>CO1 L2 5M</p> <p>CO1 L2 5M</p> |
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OR

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| 3 | <p>a Give the important postulates of Molecular orbital theory.</p> <p>b Sketch the molecular orbital diagram for Oxygen molecule.</p> | <p>CO1 L1 5M</p> <p>CO1 L3 5M</p> |
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UNIT-II

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| 4 | <p>a Draw the band diagrams for conductors, semi-conductors and Insulators.</p> <p>b Discuss about Type-I and Type-II Superconductors with examples.</p> | <p>CO2 L1 5M</p> <p>CO2 L2 5M</p> |
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OR

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| 5 | <p>a Discuss the properties of Carbon nanotubes</p> <p>b Outline the important applications of Graphene nanoparticles.</p> | <p>CO2 L2 5M</p> <p>CO2 L2 5M</p> |
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UNIT-III

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| 6 | <p>a Derive the Nernst equation for Cell potential and explain the terms involved in it.</p> <p>b Explain conductometric titration of strong acid and strong base with suitable examples.</p> | <p>CO3 L3 5M</p> <p>CO3 L2 5M</p> |
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OR

- 7 a Discuss in detail about the Potentiometric sensor with suitable example. CO3 L2 6M
b Sketch Zn-Air battery. Explain the working principle of Zn-Air battery. CO3 L3 4M

UNIT-IV

- 8 a Explain free radical addition polymerization mechanism with example. CO4 L2 6M
b Explain the synthesis & applications of PVC. CO4 L3 4M

OR

- 9 a Differentiate between Thermoplastics and Thermosetting polymers. CO4 L2 5M
b Describe the conduction mechanism of Poly Aniline. CO4 L2 5M

UNIT-V

- 10 a Derive equation for Beer – Lambert's law. CO5 L3 5M
b Sketch the Instrumentation of UV-Visible spectroscopy and explain its components. CO5 L3 5M

OR

- 11 a Discuss the principle and applications of IR Spectroscopy. CO5 L2 5M
b Give important applications of HPLC Chromatography. CO5 L2 5M

