



## I B.Tech II Sem Supply End Examination, March 2022

**Engineering Chemistry**  
**(CIVIL, CSC, CSD, ECE, MECH)**
**Time: 3 Hours.****Max. Marks: 70**

Note: 1. Answer any FIVE questions.

2. Each question carries 14 marks and may have a, b as sub questions.

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|---|----|--|----|-----|-----|
| 1 | a) | Draw energy level diagram for N <sub>2</sub> molecule. Calculate the bond order and write its magnetic behaviour                                 | 7M | C01 | BL3 |
|   | b) | Discuss about the salient features of crystal field theory   | 7M | C01 | BL2 |
| 2 | a) | In transition metal d- orbitals, splitting of spectral lines takes place. Illustrate with reference to tetrahedral field                         | 7M | C01 | BL2 |
|   | b) | What is doping? What is the effect of doping in the conduction of metals   | 7M | C01 | BL1 |
| 3 | a) | Municipal water is to be subjected to disinfection. Give reason. Describe chlorination and ozonisation of domestic water.                        | 7M | C02 | BL1 |
|   | b) | Differentiate scales and sludges. Mention the methods for their Removal.   | 7M | C02 | BL2 |
| 4 | a) | What do you mean by caustic embrittlement? How is it caused? Give the measures to be taken for its prevention.                                   | 7M | C02 | BL2 |
|   | b) | What is an electrochemical cell? Describe the construction and working of any electrochemical cell   | 7M | C03 | BL2 |
| 5 | a) | Provide the cell reaction that occurs in lithium cell considering the reactions at anode and cathode.  | 7M | C03 | BL2 |
|   | b) | Differentiate electroplating and electroless plating. Describe electroless plating of nickel.  | 7M | C03 | BL3 |
| 6 | a) | Draw various conformers of n-butane  | 7M | C04 | BL3 |
|   | b) | Give the reaction mechanism in the addition of Grignard reagent to CO <sub>2</sub> and carbonyl compounds  | 7M | C04 | BL1 |
| 7 | a) | Define and explain about Saytzeff's rule with suitable example   | 7M | C04 | BL1 |
|   | b) | How do you apply UV spectroscopy in quantitative analysis  | 7M | C05 | BL3 |
| 8 | a) | What is the principle of NMR spectroscopy? Define chemical shift and give its significance.  | 7M | C05 | BL1 |
|   | b) | In an IR spectrum various stretching and bending vibrations are observed. Illustrate various types of stretching vibrations with rough diagrams. | 7M | C05 | BL2 |