

Roll No.

Total No. of Questions : 09]

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Paper ID [A0112]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 1st/2nd)

ENGINEERING CHEMISTRY (CH - 101)

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Five** questions from Section - B & C.
- 3) Select atleast any **Two** questions from Section - B & C.

Section - A

Q1)

(Marks : 2 each)

- a) How are salts responsible for the temporary and permanent hardness of water? Explain.
- b) Aluminium corrodes in alkaline medium but iron does not. Explain.
- c) Though ammonia does not contain any hydroxyl ion but still it is a base, explain.
- d) Explain the type of corrosion with evolution of hydrogen ions.
- e) Pitting corrosion is dangerous, explain.
- f) Indicate the number and type of ¹H-NMR signals expected in CH₃-CH=CH₂.
- g) Differentiate between bathochromic and hypsochromic shifts.
- h) Explain UV - Transitions.
- i) Define quantum yield and explain with specific examples.
- j) Define phase, component and degrees of freedom.

Section - B

(Marks : 8 each)

- Q2)** Name the impurities causing temporary and permanent hardness. Describe any one process for the removal of hardness.
- Q3)** Write short notes on :
- (a) Sacrificial anodic protection.
 - (b) Erosion corrosion.
- Q4)** Explain Bronsted-Lowry Theory giving some specific examples.
- Q5)** Define a cell. Distinguish between electrochemical and electrolytic cell citing some specific examples.

Section - C

(Marks : 8 each)

- Q6)** How do you distinguish between different types of transitions involved in UV-VIS spectrophotometry?
- Q7)** Explain the shielding and deshielding process in NMR-spectroscopy with some suitable examples.
- Q8)** Describe the Phase-Rule Diagram for Water-System.
- Q9)** Write short notes on the following :
- (a) Photosensitized reactions.
 - (b) Liquid-liquid Phase Diagram.

