

C104

Total Pages : 3

Roll No.

MCH-508

Physical Chemistry-I

M.Sc. Chemistry (MSCCH)

2nd Semester Examination, 2022 (June)

Time : 2 Hours]

Max. Marks : 40

Note : This paper is of Forty (40) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

SECTION-A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Ten (10) marks each. Learners are required to answer any Two (02) questions only.

(2×10=20)

1. Define unimolecular reactions and explain its mechanism by Lindemann's theory.
2. Discuss the mechanism of photolysis of acetaldehyde.

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[P.T.O.]

3. Write short notes on the following :
 - (a) Polarography.
 - (b) Corrosion.

4. Define quantum yield. What are the reasons of high and low quantum yield.

5. Write short notes on the following :
 - (a) Electrochemical series.
 - (b) Lambert-Beer's law.

SECTION-B

(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Five (05) marks each. Learners are required to answer any Four (04) questions only. (4×5=20)

1. Write short note on Jablonski diagram.

2. Explain the concept of steady state approximation.

3. Calculate electrode potential at 25°C for the electrode reaction : $\text{Zn}^{2+}(\text{aq}) + 2\text{e}^{-} \rightleftharpoons \text{Zn}(\text{s})$
Given $E^{\circ}(\text{Zn}^{2+}, \text{Zn}) = -0.76 \text{ V}$; $[\text{Zn}^{2+}] = 0.1 \text{ M}$

4. What do you mean by the term :
 - (a) Decomposition potential.
 - (b) Potentiometry.
 5. Discuss the transition state theory of reaction rate.
 6. What are the factors that affect the rate of reaction in solution ?
 7. Discuss the kinetics of hydrogen-chlorine reaction.
 8. Define the term activity and mean ionic activity of an electrolyte.
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