

MID-SEMESTER TEST - 2024
(03-05-2024)

MAX-MARKS-12
Time Allowed-01 hrs

B.ScCH) Chemistry Sem-IV

PHYSICAL CHEMISTRY. UPC-2172012403

(Electrochemical cells Chemical kinetics & Catalysis)

All Question carry equal Marks.
Attempt any Six.

- ① Distinguish between order & molecularity.
- ② Higher the activation energy of a reaction slower is the rate of reaction. (Explain with reason).
- ③ A first order reaction has rate constant $2.2 \times 10^{-5} \text{ min}^{-1}$ at 458K & $3.07 \times 10^{-3} \text{ min}^{-1}$ at 510K respectively, calculate the energy of activation.
- ④ Explain the role of catalyst with the help of potential energy diagram.
- ⑤ ~~and~~ Differentiate stationary & non stationary chain reaction.
- ⑥ Describe the calomel half cell and derive its Nernst equation.
- ⑦ Why can we not use voltmeter for determining the e.m.f. of a galvanic cell?
- ⑧ Set up Galvanic cell for the following reaction.
$$\text{Fe(s)} + \text{Cl}_2(\text{g}) \rightleftharpoons \text{FeCl}_2(\text{aq})$$
$$2\text{Cr(s)} + 3\text{Hg}_2\text{Cl}_2(\text{s}) \rightleftharpoons 2\text{Cr}^{3+}(\text{aq}) + 6\text{Cl}^{-}(\text{aq}) + 6\text{Hg(l)}$$
- ⑨ Describe briefly the potentiometric method for the determination of emf of a cell.