

Question Paper

Exam Date & Time: 28-May-2022 (09:30 AM - 12:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION
INTERNATIONAL CENTRE FOR APPLIED SCIENCES
II SEMESTER B.Sc.(Applied Sciences) in Engg.
END SEMESTER THEORY EXAMINATION-MAY/JUNE 2022
Chemistry [ICH 121]

Marks: 50

Duration: 180 mins.

Answer all the questions.

Missing data if any may be suitably assumed

- 1) Explain the construction and working of glass electrode (ion selective electrode). Write two advantages and disadvantages. (5)
 - A)
 - B) The gaseous reaction $A+B \rightleftharpoons C+D$ is studied in a one-liter vessel at 250 °C. The initial concentration of A is three times the initial concentration of B. After equilibrium is attained, the concentration of C is found to be equal to the concentration of B. Calculate the equilibrium constant of the reaction. (3)
 - C) Give Reason for the following: (2)
 - i) Conductivity of metals decreases at high temperatures.
 - ii) Brittle nature of Ionic compounds.
- 2) Explain the following: (5)
 - A) i) Metallic bonding in Li with suitable diagram and its conduction through band overlapping.
ii) Criteria for Resonance and orbital approach to benzene.
 - B) Derive the relationship between hydrolysis constant (K_H), ionic product of water (K_w) and dissociation constant of acid (K_a) for hydrolysis of CH_3COONa . Calculate the hydrolysis constant for CH_3COONa , if K_a for CH_3COOH at 25 °C is 1.74×10^{-5} . (3)
 - C) Explain liquid junction potential with potential expression. Give the functions of the salt bridge. (2)
- 3) Derive Gibbs-helmholtz equation. Discuss its application and significance. (5)
 - A) Explain:
 - i) Homogeneous system
 - ii) Extensive property