

- Q-4** **Attempt all questions** **(14)**
- A. Discuss various types of physical properties of 3d transition element. **(5)**
- B. Define: Joule Thomson effect. Explain Joule Thomson co-efficient and inversion temperature. **(5)**
- C. Explain Non Stoichiometric and Interstitial compounds. **(4)**
- Q-5** **Attempt all questions** **(14)**
- A. Give Dieckmann's and Perkin method to prepare cyclo alkanes. **(5)**
- B. Write a short note on heat of hydrogenation and stability of alkenes. **(5)**
- C. For 10% (W/W) solution of NaCl what is the mole fraction of each component in the solution? **(4)**
- Q-6** **Attempt all questions** **(14)**
- A. Write the reactions of cycloalkanes with halogen and halogen acids. **(5)**
- B. Explain E^1 and E^2 reaction. **(5)**
- C. For preparing 28% W/W H_2SO_4 solution how many grams of H_2SO_4 is required if 50 gm of H_2O is used? **(4)**
- Q-7** **Attempt all questions** **(14)**
- A. Derive $C_p - C_v = R$. **(5)**
- B. Write the statement of zeroth law of thermodynamic and derive its mathematical form. **(5)**
- C. Give the differences between physisorption and chemisorption. **(4)**
- Q-8** **Attempt all questions** **(14)**
- A. Describe Freundlich Adsorption isotherm. **(5)**
- B. Derive the equation of pH, K_h and degree of hydrolysis of a salt of a weak acid and weak base. **(5)**
- C. Calculate pH before and after the addition of 0.01 mole of NaOH to 1 liter of a buffer solution that is 0.1 M CH_3COOH and 0.1 M is CH_3COONa . The K_a of CH_3COOH is 1.75×10^{-5} . **(4)**

