

**B.Sc. Semester - 4 (CBCS) Examination**  
**March/April-2023 [NEW COURSE]**  
**Chemistry-C401(Core)**

Time: 2:30 Hours

Marks: 70

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

**Q.1(A) Answer the following questions. (04)**

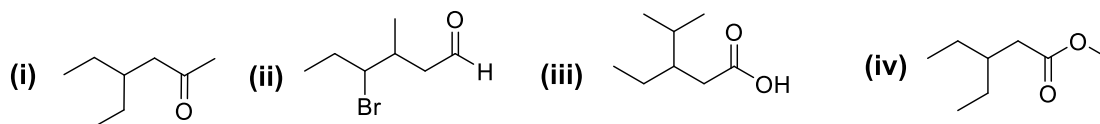
Define:  $\pi$ -acid ligands and flexidentate ligands with two examples of each.

**Q.1(B) Answer the following question. (Any Two) (10)**

1. Discuss the structure and bonding of Zeise salt in detail.
2. Give the name of any five structural isomerisms in co-ordination compound with one example of each.
3. Structure and roll of hemoglobin in biological system.

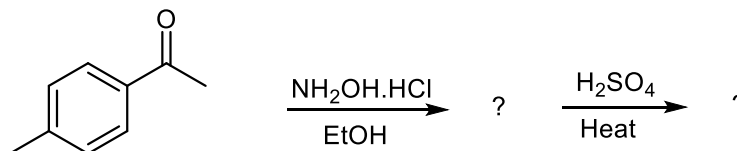
**Q.2(A) Answer the following questions. (04)**

Give the IUPAC name of each of following molecules.



**Q.2(B) Answer the following question. (Any Two) (10)**

1. Complete the following reaction with proper mechanism and write the name of reaction.

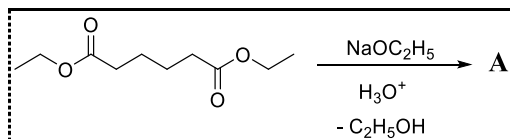


2. Give the following synthesis from ethyl acetoacetate;

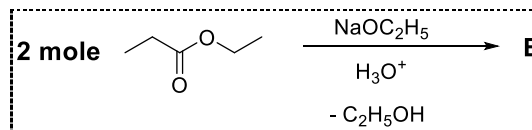
I. butyric acid      II. crotonic acid

3. Identify and complete the following reactions:

I.



II.



**Q.3(A) Match the following Pairs (04)**

**Physical Properties**

1. Viscosity
2. Surface Tension
3. Dipole Moment
4. Refractive Index

**Unit**

- A.  $\text{C}\cdot\text{m}$
- B.  $\text{Kg}\cdot\text{m}^{-1}\text{s}^{-1}$
- C. degree
- D. Unitless
- E.  $\text{N}\cdot\text{m}^{-1}$

**Q.3(B) Answer the following question. (Any Two) (10)**

1. Determine the equation for the relation between temperature and volume for adiabatic process.
2. Give the applications of dipole moment.
3. Explain in detail: Joule Thomson Effect.

**Q.4(A) Answer the following questions. (04)**

What is toxicity? Discuss the toxic effect of Mercury.

**Q.4(B) Answer the following question. (Any Two) (10)**

1. What is ligand? Give the classification of ligands on the basis of denticity.
2. Describe the structure of ferrocene.
3. Describe Wolff Kishner reduction with mechanism.

**Q.5(A) Answer the following questions. (04)**

Explain: Extensive and Intensive properties with examples.

**Q.5(B) Answer the following question. (Any Two) (10)**

1. Effect of substitution on acidity of carboxylic acid with examples.
2. How one can find out refractive index of a liquid by using Abbe's refractometer?
3. 5 mole of an ideal gas at  $27^{\circ}\text{C}$  is allowed to expand isothermal reversibly from a volume 2 liters to 10 liters then calculate work done by the gas in calories and Joules. where,  $R=1.987 \text{ cal/K.mol}$

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