

B.Sc. Semester - 4 (CBCS) Examination
March/April-2024 [OLD COURSE]
CHEMISTRY(CORE)

Time: 2:30 Hours**Marks: 70****Instructions:**

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

Que.1(A) What is toxicity? Discuss the toxic effect of mercury. (04)

Que.1(B) Answer the following. (Any Two) (10)

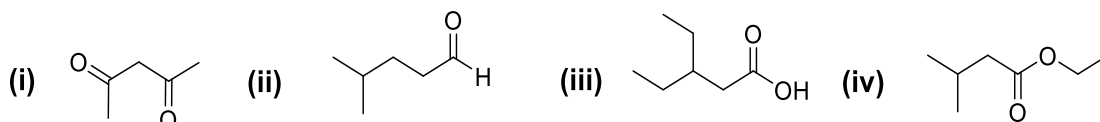
- (1) What is hapticity? Give any five examples.
- (2) Discuss the structure and bonding of Zeise salt in detail.
- (3) Structure and roll of myoglobin in biological system.

Que.2(A) Explain: Keto-enol Tautomerism in Ethyl acetoacetate. (04)

Que.2(B) Answer the following. (Any Two) (10)

- (1) Draw the full structure of XeF_2 , XeF_4 , XeOF_4 , XeO_3 & XeO_4 .
- (2) Give the use of noble gas in detail.
- (3) Give any two synthesis of ethyl acetoacetate.

Que.3(A) Give the IUPAC name of each of following molecules. (04)



Que.3(B) Answer the following. (Any Two) (10)

- (1) Describe Wolff-Kishner reduction with mechanism.
- (2) Give any two nucleophilic addition reactions of carbonyl.
- (3) Explain: Effect of substitution on acidity of carboxylic acid.

Que.4(A) The dipole moment of HBr molecule is 0.79 D and bond distance = 1.41 Å. If, electronic charge, $e = 4.8 \times 10^{-10}$ esu. Calculate the ionic character of HBr. (04)

Que.4(B) Answer the following. (Any Two) (10)

- (1) Give the reaction and mechanism of Beckmann rearrangement.
- (2) What is surface tension and Parachor? State the methods for determination of surface tension and explain any one in detail.
- (3) How one can find out refractive index of a liquid by using Abbe's refractometer?

Que.5(A) Give the statement of Zeroth law of thermodynamics. (04)

Que.5(B) Answer the following. (Any Two) (10)

- (1) Explain: Mathematical form of first law of thermodynamics.
- (2) Explain: Heat capacity & its type.
- (3) 3 moles of an ideal gas at 27 °C is allowed to expand isothermal reversibly from a volume 2 liters to 4 liters then calculate work done by the gas in calories and Joules. Where, $R = 1.987 \text{ cal/K mol}$
