

B.Sc. Semester - 4 (CBCS) Examination
April/May -2022 [OLD COURSE]
CHEMISTRY (CORE)

Time: 2:30 Hours

Marks: 70

Instructions:

1. All questions are compulsory.
 2. Figures to the right indicate marks.
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Q. 1 (A) What is toxicity? Discuss the toxic effect of Arsenic. [04]

Q. 1 (B) Answer the following (Any Two) [10]

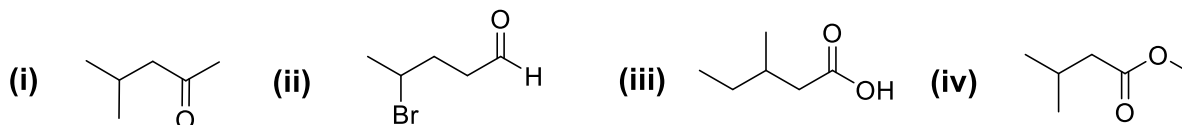
- (1) Discuss the structure and bonding of Ferrocene in detail.
- (2) Discuss the structure and bonding of Zeise salt in detail.
- (3) Structure and roll of hemoglobin in biological system.

Q. 2 (A) Give the synthesis of ethylacetoacetate by Claisen Condantation. [04]

Q. 2 (B) Answer the following (Any Two) [10]

- (1) Give the synthesis of crotonic acid from ethyl acetoacetate.
- (2) Give the use of noble gas in detail.
- (3) Draw the full structure of XeF₂, XeF₄, XeOF₄, XeO₃ & XeO₄.

Q. 3 (A) Give the IUPAC name of each of following molecules. [04]



Q. 3 (B) Answer the following (Any Two) [10]

- (1) Describe Clemmensen reduction with mechanism.
- (2) Give any two reactions of mono carboxylic acid.
- (3) Explain: Effect of substitution on acidity of carboxylic acid.

Q. 4 (A) The dipole moment of O-H bond is 1.53D and bond angle of H-O-H is 105°, then calculate the dipole moment of H₂O. [04]

Q. 4 (B) Answer the following (Any Two) [10]

- (1) Give the reaction and mechanism of Benzil-Benzilic acid rearrangement.
- (2) What is surface tension and Parachor? Explain the methods for determination of surface tension.
- (3) Give the reaction and mechanism of Aldol condensation.

Q. 5 (A) Explain: State and Path functions with examples. [04]

Q. 5 (B) Answer the following (Any Two) [10]

- (1) Explain: Heat capacity & its type.
- (2) Prove that $C_p - C_v = R$ for one mole an ideal gas system.
- (3) 2 mole of an ideal gas at 27 °C is allowed to expand isothermal reversibly from a volume 5 liters to 10 liters then calculate work done by the gas in calories and Joules.
