



**DAH-003-2014004** Seat No. \_\_\_\_\_

**B. Sc. (Sem. IV) (CBCS) (W.E.F. 2019) Examination**

**April – 2022**

**C - 401 : Chemistry**

**Faculty Code : 003**

**Subject Code : 2014004**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

- Instructions :** (1) This question paper contains five questions  
(2) Figures to the right indicate full marks.

- 1 (A) Write in short : 4  
(1) Which element is responsible for red color of blood?  
(2) Give photo synthesis reaction.  
(3) Which metal present in Grignard reagent?  
(4) Ferrocene has \_\_\_\_\_ structure.
- (B) Write any **one** in short : 2  
(1) Give the preparation of organo lithium compound.  
(2) Explain toxic effect of Arsenic
- (C) Write any **one** in Brief : 3  
(1) Give any three synthesis of Ferrocene.  
(2) Describe Myoglobin
- (D) Write any **one** short-note : 5  
(1) Explain preparation, structure and bonding in Zeises salt.  
(2) Explain toxic effects on human of any two toxic metals.

- 2 (A) Write in short : 4
- (1) What are active methylene compound?
  - (2) Define Tautomer.
  - (3) Give uses of Radon.
  - (4) Give the electronic configuration of Neon.
- (B) Answer any **one** in brief : 2
- (1) Which two noble gas elements make a number of compounds?
  - (2) Write Keto-enol form of EAA
- (C) Answer any **one** in detail : 3
- (1) Write short notes on Clathrates of noble gases.
  - (2) Give Synthesis of Adipic acid from EAA
- (D) Answer any **one** in detail : 5
- (1) Explain preparation and properties of
    - (i)  $XeF_2$
    - (ii)  $XeF_4$
  - (2) Explain preparation of Crotonic acid and 2-Pentanone from EAA
- 3 (A) Answer the following : 4
- (1) Give the reaction of Carboxylic acid with  $NaHCO_3$ ,
  - (2) Give name of acid derivatives.
  - (3) Give IUPAC name of  $CH_3-CO-CH_3$
  - (4) Complete the reaction  $R-COCl + H_2(Pd) \rightarrow$
- (B) Answer any **one** in brief : 2
- (1) Explain structure of Aldehyd & Ketone
  - (2) Describe decarboxilation reaction.

- (C) Answer any **one** in detail : 3
- (1) Give addition reaction of HCN with Acetaldehyde & Acetone.
  - (2) Explain Esterification reaction with mechanism.
- (D) Write any **one** short notes : 5
- (1) (A) Woulf krishner reduction reaction  
(B) Clemmensen reduction reaction
  - (2) Provide the method of preparation of mono carboxylic acids.
- 4 (A) Answer the following : 4
- (1) Define Molar volume.
  - (2) In Perkin condensation, which type of acid anhydride takes part?
  - (3) Give one name of Catalyst used for Backman rearrangement.
  - (4) What is SI unit of Viscosity?
- (B) Answer any **one** in brief : 2
- (1) Give only mechanism of Aldol condensation.
  - (2) Prove that  $H_2O$  has a bent structure.
- (C) Answer any **one** in detail : 3
- (1) Discuss three application of Perkin reaction.
  - (2) Describe factor affecting Viscosity.
- (D) Answer any **one** in detail : 5
- (1) Explain Witting reaction with principal, mechanism and application.
  - (2) Explain Dipole moment and any three application of it.

- 5 (A) Answer the following : 4
- (1) Give one example of extensive properties.
  - (2) Define : Closed system.
  - (3) State first law of Thermodynamic.
  - (4) Doctor thermometer work on which thermodynamic law?
- (B) Answer any **one** in brief : 2
- (1) Distinguish between Reversible and Irreversible process.
  - (2) Under which condition  $\Delta U = \Delta H$  for a chemical reactions?
- (C) Answer any **one** in detail : 3
- (1) Describe  $\Delta H = \Delta U + \Delta n(g)RT$
  - (2) Prove that  $C_p - C_v = R$ .
- (D) Answer any **one** in detail : 5
- (1) State Kirchhoffs law & describe it.
  - (2) Write Short note on Joule Thomson effect.
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