DZ-003-1014004 Seat No. _____

B. Sc. (Sem. IV) (CBCS) (W.E.F. 2016) Examination

April – 2022

C - 401 : Chemistry

Faculty Code : 003

Subject Code : 1014004

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions :

(1) This question paper contain ten questions. Each **14** marks.
(2) Figure to the **right** side indicate full marks of sub-question.
(3) Write any **five** questions.

1 (A) Answer the following questions : **4**

(1) Write the formula of Zeise's salt.

(2) Write the structural formula of Trimethyl Aluminium (Dimer).

(3) How many Heme groups are arranged in Hemoglobin?

(4) Which heterocyclic ring is present in Chlorophyll?

(B) What is organometallic compound? Give one example. **2**

(C) Give the toxicity and reasons of toxicity of Lead. **3**

(D) Discuss the structure of Ferrocene in detail. **5**

2 (A) Answer the following questions : **4**

(1) Which metal is associated in the structure of Vitamin B_{12} ?

(2) Which metal is associated in the structure of Chlorophyll ?

(3) Complete the following reaction.

$$C_2H_5Li \xrightarrow{\Delta}$$

(4) Define Metalloporphyrins.

(B) Give the toxicity of Arsenic. **2**

(C) Give the preparation of Organo Lithium compounds. **3**

(D) Explain structure of chlorophyll and it's importance. **5**

3 (A) Answer the following questions : **4**

(1) How many unpaired electrons are present in outer orbital of Noble gas?

(2) Write electronic configuration of Argon.

(3) Write the structure of Adipic acid.

(4) Give the structure of Methylene group.

(B) Write any four uses of Noble gases. **2**

(C) Give preparation of Acetonyl aceton from Ethylacetoacetate. **3**

(D) Discuss the preparation and properties of XeF_6. **5**

4 (A) Answer the following questions : **4**

(1) What is the symbol of Xenon ?

(2) Complete the following reaction.

$XeF_4 + Pt \longrightarrow$

(3) Crotonic acid is a short chain unsaturated carboxylic acid. True or False ?

(4) Write the structure of Vinegar.

(B) Define : Tautomer. **2**

(C) Explain hybridization and structure of XeF_2. **3**

(D) Explain Claisen condensation reaction with mechanism for Ethylacetoacetate. **5**

5 (A) Answer the following questions : **4**

(1) Give IUPAC name of CH_3CHO.

(2) Complete the following reaction.

$CH_3CHO + NH_3 \longrightarrow$

(3) Write the structure of Ethylpropanoate.

(4) Give IUPAC name of Formic acid.

(B) Give one preparation of carboxylic acid. **2**

(C) Give preparation of aldehydes from acid chlorides: **3**

(D) Explain reduction of ketones. **5**

6 (A) Answer the following questions : 4

(1) What is carbonyl group?

(2) Write the structure of Sodium acetate.

(3) Write the structure of Acetic anhydride.

(4) Write the structure of Phenyl hydrazine.

(B) Explain reaction of Acetone with Hydroxylamine and Hydrazine. 2

(C) Explain Hell-Volhard-Zelinsky (HVZ) reaction. 3

(D) Explain acidity of carboxylic acid. 5

7 (A) Answer the following questions : 4

(1) Give the structural formula of Witting reagent.

(2) Write the structural formula of Methylisocyanate.

(3) Give the name of apparatus which is used to measure viscocity.

(4) What is SI unit of surface tension?

(B) Define Molar volume. 2

(C) Give mechanism of Perkin reaction. 3

(D) Discuss the method for determination of surface tension. 5

8 (A) Answer the following questions. 4

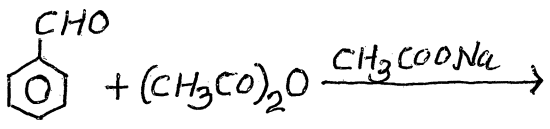
(1) Write the structure of Benzil.

(2) Give the reagents of Hoffman bromamide degradation reaction:

(3) What is the effect of temperature on surface tension?

(4) What is parachor ?

(B) Complete the following reaction. 2



(C) H_2O has dipole moment while CO_2 has no dipole moment, explain it. 3

(D) Explain Aldol condensation with mechanism. 5

9 (A) Answer the following questions : **4**

(1) Name the process in which temperature remains constant.

(2) Name the process in which no heat is exchanged between systems and surrounding.

(3) Define surrounding.

(4) Define specific heat.

(B) Explain zeroth law of thermodynamics. **2**

(C) Define intensive properties and extensive properties with example. **3**

(D) Define heat capacity and derive Cp - Cv = R. **5**

10 (A) Answer the following questions : **4**

(1) Name the process in which volume remains constant.

(2) In a cyclic process what is the change of enthalpy.

(3) Define Enthalpy.

(4) What is close system.

(B) Give statements of first law of thermodynamics : **2**

(Any two)

(C) Explain internal energy in detail. **3**

(D) Prove that $W_{rev} > W_{irr}$. **5**
