

**Faculty of Science****B. Sc (Chemistry) I-Year, CBCS –I Semester Backlog Examinations –January, 2021****PAPER: Chemistry-I**

Time: 2 Hours

Max Marks: 80

I. Answer any FOUR of the following questions (4x16=80 Marks)

1. Draw the Molecular Orbital energy diagram of  $N_2$  molecule. Write about its Bond order and magnetic behaviour.
2. (i) Describe Silicones and its classification.  
(ii) Discuss the reactions of Hydroxylamine.
3. Explain the reaction and mechanism of the following  
(i) Halogenation (ii) Friedel crafts alkylation
4. Explain the following with examples.  
(i) Diels-Alder reaction (ii) Ozonolysis
5. Derive the relation between vanderwaals constants and Critical Constants
6. Define surface tension. Write about its determination using Stalagmometer.
7. Explain Bayer's Strain theory with suitable examples.
8. Derive Bragg's equation

\*\*\*\*\*

**Faculty of Science**  
**B. Sc (Chemistry) I-Year, CBCS –I Semester**  
**Backlog Examinations –June/July, 2022**  
**PAPER: Chemistry-I**

Time: 3 Hours

Max Marks: 80

**Section-A**I. Answer any *eight* of the following (8x4=32 Marks)

1. Explain Fajan's rules with examples?
2. Explain the structure of Diborane?
3. What are Carbides? How are they classified?
4. Explain Markovnikov's rule with example?
5. Explain the mechanism of Nitration of Benzene?
6. What is Inductive Effect?
7. Explain de-Broglie's theory and derive the equation?
8. Describe Andrew's Isotherms of Carbon dioxide?
9. Write about Henry's law?
10. Explain Common Ion Effect with example?
11. Write tests to identify Ammonium ion in qualitative analysis?
12. What is Geometrical Isomerism? Explain with an example?

**Section-B**

II. Answer the following questions (4x12=48 Marks)

13. (a) Draw the MOED of CO? Explain the magnetic character and Bond order?  
(OR)  
(b) What are Silicones? Explain the different types of Silicones?
14. (a) Write any two methods of preparation of Alkenes? Explain the reactions of Ethylene with i) H<sub>2</sub>O ii) Oxidation  
(OR)  
(b) Write a note on stability and applications of Carbocations and Carbanions?
15. (a) Derive the relationship between Critical constants and Vanderwaals constants?  
(OR)  
(b) Explain the following i) Photoelectric Effect ii) Heisenberg's Uncertainty Principle?
16. (a) Derive Bragg's Equation?  
(OR)  
(b) Write about the Conformational structures of Cyclohexane?

\*\*\*\*\*

## Faculty of Science

## B. Sc (Chemistry) I-Year, CBCS-I Semester Backlog Examinations –June, 2023

## PAPER: Chemistry-I

Time: 3 Hours

Max Marks: 80

## Section-A

I. Answer any *eight* of the following questions (8x4=32 Marks)

1. What is Fajan's rule? Give any two implications of it.
2. Write a note on Lewis acid nature of boron halides.
3. Give one preparation method and any two chemical properties of hydroxyl amine.
4. Explain Markonikov's rule with an example.
5. What is Huckel's rule of aromaticity? Give two examples.
6. What are conjugated dienes? Give any one chemical property of them.
7. Define threshold frequency and work function.
8. Compare ideal and non-ideal solutions.
9. What is the physical significance of Van der Waal's constants?
10. Give an identification test for  $\text{SO}_4^{2-}$  and  $\text{Cl}^-$  ions.
11. What are cis-trans isomers? Give two examples.
12. Define Unit cell. Write the names of any 4 crystal systems.

## Section-B

II. Answer the following questions (4x12=48 Marks)

- 13.(a) What is hybridization? Explain the common hybridizations with suitable examples.

(OR)

- (b) What are carbides? Give their classification, preparation, properties and applications.

- 14.(a) What is +I and -I effect? Give examples. Write any two applications of inductive effect.

(OR)

- (b) Write the following reaction of benzene with mechanism  
i) Nitration ii) halogenation

- 15.(a) What is Joule-Thomson effect? Give the significance of Joule-Thomson coefficient. Explain the liquification of gases by Linde's Method.

(OR)

- (b) Define surface tension and give its units. How do you determine the viscosity using stalagmometer.

- 16.(a) What are conformational isomers? Explain the conformational analysis of n-butane.

(OR)

- (b) Write any two laws of crystallography. Define and derive Bragg's equation.

\*\*\*\*\*