



Progressive Education Society's  
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16, NEP 2020  
(Autonomous)

End Semester Examination: Nov/Dec 2023

Total No. of Questions: 4

Total No. of Pages: 2

First Year (Class Name)  
COURSE CODE: CHE11102  
COURSE NAME: Basics in Organic and Inorganic Chemistry  
(Semester I)

Program: B.Sc.  
Program Specific: B.Sc. Chemistry  
Course Type: Major

Credits: 2  
Time: 2 Hours  
Max. Marks: 30  
SET: A

*Instructions to the candidate:*

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Draw a well labeled diagram wherever necessary.

**Q1) Answer the following.**

[5 X 1 = 05]

1. What is inductive effect?
2. What is ionic bond?
3. Explain homologous series of alkane.
4. State Saytzeff rule.
5. What is bond angle?

**Q2) Answer the following (Attempt any 5/7)**

[5 X 2 = 10]

1. Why  $\pi$ -bond is weaker than  $\sigma$ - bond? Explain.
2. Write short note on carbocation.
3. Define bond length. What is the bond length of C=C (carbon carbon double bond)?
4. What are alkane? Give preparation of alkane.
5. Write short note on Electrophile.
6. Draw resonance structures of phenoxide ion.
7. Why chloroacetic acid is more acidic than acetic acid?

**Q3) Answer the following (Attempt any 2/4)**

[2 X 5 = 10]

1. Discuss the formation of  $[\text{Ni}(\text{CN})_4]^{2-}$  using hybridization concept.
2. Explain the mechanism of free radical substitution of halogenation of methane under U.V. light.
3. What are the postulates of V.B. theory?

4. Explain the geometry of  $\text{BeH}_2$  hybridization concept.

**Q4) Answer the following (Attempt any 1/2)**

**[1 X 5 = 05]**

1. What is hybridization? Discuss the structure and shape of ethane molecule using hybridization concept.

2. Identify the products



