B.Sc. I Semester Degree Examination, Oct./Nov. - 2018

CHEMISTRY

Paper - 1

(New)

Time : 3 Hours   Maximum Marks : 60

Instructions to Candidates:

a)   Part-A **ALL** are compulsory.

b)   Part-B solve any **FIVE** questions from seven questions.

PART-A

1.   Answer the following questions.   **(10×1=10)**

a)   Write Schrodinger wave equation and define the terms involved.

b)   Why is 4s orbital lower in energy than 3d orbital.

c)   What is complexometric titration?

d)   What are free radicals? Give example.

e)   What is Wurtz reaction?

f)   State Saytzeff's rule.

g)   How alkynides are formed?

h)   Define root mean square velocity.

i)   What are liquid crystals?

j)   Define the term plane of symmetry.

PART-B

Answer the following any **FIVE** questions (Each question carries **TEN** marks) **(5×10=50)**

2.   a)   What is electronegativity? How it varies in a periodic table.   (4)

b)   What are quantum numbers and give their significance.   (6)

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3. a) Explain the terms: (4)
   i) Titration
   ii) Normality
   iii) Molarity
   iv) Equivalence point.
   b) What is an indicator? Discuss the acid-base titration with example. (6

4. a) What is inductive and resonance effect? (4
   b) What is SN^2 reaction? Explain the mechanism of reaction with example. (6

5. a) Give any two general methods of synthesis of cycloalkanes. (4
   b) Explain free radical mechanism of chlorination of methane. (6

6. a) Write a note on peroxide effect. (4
   b) Give any three methods of preparation of alkynes. (6

7. a) Explain relationship between critical constants and vander walls constants. (4
   b) Derive the law of corresponding states. (6

8. a) Write a note on Nematic and Cholesteric phases (4
   b) Describe the determination of crystal structure of Nacl. (6

B.Sc. I Semester Degree Examination, March/April - 2021

CHEMISTRY

Paper : I

(New)

Time : 3 Hours   Maximum Marks : 60

Instructions to Candidates:

1.   Part - A : All are Compulsory.
2.   Part - B : Solve any **Five** questions from **Seven** questions.

PART - A

1.   Answer **All** the following questions.   **(10×1=10)**

a)   Write schrodinger wave equation for hydrogen atom.

b)   Define electronegativity.

c)   What is equivalence point?

d)   What are carbenes? Give examples.

e)   What is Kolbes reaction?

f)   State Markownikoffs rule.

g)   How alkynides are formed?

h)   What is average velocities?

i)   Define intermolecular forces.

j)   Define unit cell.

PART - B

Answer the following any **Five** questions. (Each question carries **Ten** marks).

(5×10=50)

2.   a)   Define ionisation energy. Explain its trends in the periodic table.   **(4)**

b)   State and explain Aufbau principle and Hund's multiplicity rule.   **(6)**

3. a) Describe acid-base titration. (4

   b) Explain Redox titration with example. (6

4. a) What is hyperconjugation and electromeric effects? (

   b) What is SN^1 reaction? Explain the mechanism of reaction with example. (

5. a) Explain free radical mechanism of chlorination of methane. (

   b) Give any three general methods of synthesis of cycloalkanes. (

6. a) Give any two general methods of preparation of alkynes. (

   b) Explain the addition reactions of alkynes with H_2O, HCN and Br_2. (

7. a) Give the relationship between critical constant and Vander Wall's constants.

   b) Explain PV isotherm of real gases.

8. a) Give the classification of structures of nematic and cholesteric phases.

   b) Derive Bragg's equation.

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B.Sc. I Semester Degree Examination, February/March 2022
Paper – I : CHEMISTRY (New)

me : 3 Hours

Max. Marks : 60

Instructions : 1) Part – **A** : **All** are **compulsory**.
2) Part – **B** : Solve **any five** questions from **seven** questions.

PART – A

. Answer the following questions.

(10×1=10)

a) Write the electronic configuration of Ca.

b) Define electron affinity.

c) Define indicator.

d) What is precipitation titration ?

e) Define carbocation.

f) State Saytzeff's rule.

g) Write the uses of chloroprene.

h) Define root mean square velocity.

i) What are liquid crystals ?

j) Define the term plane of symmetry.

PART – B

nswer the following **any five** questions. **Each** question carries **ten** marks. (5×10=50)

. a) What is ionisation energy ? Explain its trends in the periodic table.   4

b) What are quantum numbers and give their significance.   6

. a) Discuss the acid-base titration with example.   4

b) Define titration. Explain redox titration by taking diphenyl as an indicator.   6

. a) What is inductive effect ? Explain +I and – I effect.   4

b) What is S_N1 reaction ? Explain the mechanism of reaction with example.   6

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5. a) Write the postulates of Baeyer's strain theory.

   b) Explain free radical mechanism of chlorination of methane.

6. a) Write a note on peroxide effect.

   b) Give any three methods of preparation of alkynes.

7. a) Explain laws of rational indices.

   b) Describe Maxwell distribution of molecular velocities.

8. a) Describe continuity of state.

   b) Describe the difference between liquid crystals solid and liquid.

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B.Sc. I Semester Degree Examination, February/March - 2023
CHEMISTRY (New)
Analytical and Organic Chemistry - I
Paper : DSC-1

Time : 3 Hours   Maximum Marks : 60

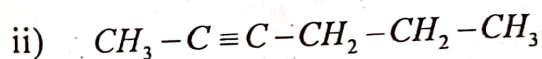*Instructions to Candidates :*
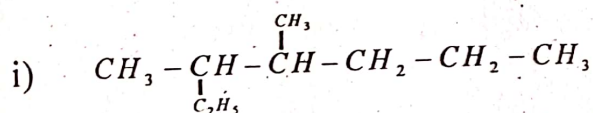
1) Part - A: All questions are compulsory.

2) Part -B: Answer any Five full questions.

## PART-A

Answer the following questions.   (10×1=10)

1. a)   What is Co-precipitation?

    b)   Define the term normality.

    c)   Define the term precision.

    d)   Define the term Accuracy.

    e)   What is analytical chemistry?

    f)   What is aromaticity?

    g)   What is nitration?

    h)   What is meant by Orientation?

    i)   Give the IUPAC name of the following structure.

    i) $CH_3 - \underset{\underset{C_2H_5}{|}}{C}H - \overset{\overset{CH_3}{|}}{C}H - CH_2 - CH_2 - CH_3$

    ii) $CH_3 - C \equiv C - CH_2 - CH_2 - CH_3$

    j)   Write the type of hybridization of the carbon atom in the following structure.

    i) $CH_3 - C \equiv N$

    ii) $CH_3 - CH = CH - CH_3$
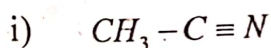
PART - B

Answer any FIVE full questions.

2. a) What is an error ? Give the different types of errors.

   b) Explain the callibration of burrette.

3. a) Explain the precipitation titration by Volhards and Mohrs method.

   b) What are the safety rules to work in analytical laboratory?

4. a) Explain the total hardness of water by using EDTA.

   b) Explain acid-base titration curve

      i) Strong acid v/s Weak base

      ii) Strong acid v/s Strong base

5. a) Write a note on

      i) Inductive effect

      ii) Electromeric effect.

   b) Explain the different types of organic reaction addition, substitution, eliminat
      reaction.

6. a) What is Friedel-craft reaction? Give the mechanism of the reaction.

   b) What is Wurtz reaction and Wurtz fittig reaction?

7. a) What is SN_1 reaction? Give the mechanism of the reaction with example.

   b) What are activating and deactivating groups?

8. a) Explain E_1 and E_2 elimination reaction. Give the mechanism of the reaction.

   b) Give the advantages of organic reagents in inorganic analysis.