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

CHEMISTRY

Paper-III

Time : 3 Hours Maximum Marks : 80

Instructions to Candidates:

1. Question paper has **FOUR** sections.
2. All sections are compulsory.
3. Answer for all sections should be written in the same answer book.

2018

SECTION-A

[Inorganic, Organic and Physical]

1. Answer any **TEN** of the following. **(10×2=20)**

a) What is meant by Solvolysis?

b) Define the term ionic bond.

c) What are bonding and antibonding molecular orbitals?

d) What are acidic and basic solvents? Give examples.

e) Give elementary idea of VBT.

f) What are dihydric alcohols? Give an example.

g) Write the oxidation reaction of trihydric alcohols.

h) Explain the carboxylation reaction of phenol.

i) Write the reaction of acids with ethers.

j) How ethylene oxide react with Grignard reagent?

k) Define Surface tension.

l) Define parachor and write its equation.

m) What is second order reaction?

n) Give the equation for workdone in reversible adiabatic process.

o) Define Joule Thomson-effect.

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SECTION - B

[Inorganic]

2018

2. Answer any **TWO** of the following . (2×4=

a) Write a note on LCAO.

b) Explain Born -Haber cycle for the formation of NaCl crystal.

c) Discuss any two importance-reactions of liquid ammonia.

3. Answer any **TWO** of the following . (2×6=

a) Explain the formation of N_2 molecule with the help of M.O energy level diagram calculate its bond order.

b) Explain the following reactions is liquid So_2 with two examples for each type.

i) Acid-Base reaction.

ii) Solvation reaction.

c) Discuss the difference between bonding and antibonding molecular orbitals.

SECTION - C

[Organic]

4. Answer any **TWO** of the following. (2×4=

a) Give any two general methods of preparation of dihydric alcohols.

b) Explain the reactions of Grignard reagent and Organo lithium reagent with epoxi

c) Explain the mechanism of Reimer-Tiemann reaction.

5. Answer any **TWO** of the following. (2×6=

a) Explain the oxidation reactions of glycerol.

b) Explain the following reactions .

i) Claisen rearrangement

ii) Gatterman Synthesis.

c) How ethers are prepared and give two chemical reactions of ethers?

27322(New)

B.Sc. III Semester Degree Examination, Oct./Nov. - 2019

CHEMISTRY

PAPER: III

(NEW)

Time : 3 Hours Maximum Marks : 60

Instructions to Candidates:

1) Part-A : **All** are compulsory

2) Part-B : Solve any **Five** questions out of **Seven** questions.

PART-A

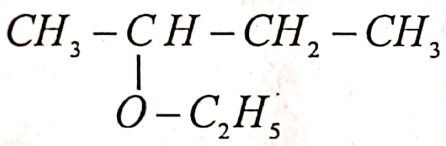
1. Answer **ALL** the following questions: **(10×1=10)**

a) Define Ionic bond with an example

b) What is bond order?

c) What are Protonic and non-protonic solvents?

d) Write the IUPAC name of

i) 

ii) $CH_3CH_2CH_2OCH_3$

e) What is the effect of electron with drawing substituents on the acidity of phenols?

f) What are Di hydric alcohols? Give example.

g) Give the classification of monohydric alcohols.

h) State "Hardy-Schulze" rule.

i) Define order of reaction with example

j) What is meant by Joule-Thomson co-efficient?

PART-B

Answer any **FIVE** of the following questions.

2. a) Write the difference between Bonding molecular orbital and Antibonding molecular orbital. **(4)**

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b) Calculate the lattice energy for the formation of Nacl using Born-Haber cycle. (6)

3. a) What are advantages and disadvantages of ammonia as a solvent. (4)

b) Explain the following reactions in liquid So_2 with one example for each type. (6)

i) Redox reaction

ii) Precipitation

iii) Acid-Base reaction

4. a) Write any two methods of Preparation for monohydric alcohols. (4

b) Explain the mechanism of Pinacol-Pinacolone rearrangement reaction. (6

5. a) Explain the following reactions (4

i) Kolbe's reaction ii) Fries rearrangement

b) Explain the mechanism of Lederer-Manasse reaction. (6

6. a) Explain how epoxides react with (4

i) Grignard reagent ii) Organo lithium compound.

b) Write any three methods of Preparation for Ethers. (6

7. a) Explain the assumptions of Transition State Theory. (4

b) Define C_p & C_v and Prove that $C_p - C_v = R$ (6

8. a) Explain the electrical Properties of Colloids. (4

b) Explain the application of Collision theory to Unimolecular reaction. (6

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

CHEMISTRY

Paper : III

(New)

Time : 3 Hours **Maximum Marks : 60**

Instructions to Candidates:

1. Part - 'A' : **All** are compulsory.
2. Part - 'B' : Solve any **Five** questions out of **Seven** questions.

PART - A

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

a) What is bond - order?

b) Define the term ionic bond.

c) What are amphoteric solvents.

d) Write the IUPAC name of

i. $CH_3\text{-}CH_2\text{-}\underset{\displaystyle O\text{-}CH_3}{\underset{|}{CH}}\text{-}CH_2\text{-}CH_2\text{-}CH_3$

ii. $CH_3CH_2\text{-}O\text{-}\underset{\displaystyle CH_3}{\underset{|}{CH}}\text{-}CH_2\text{-}CH_3$

e) What are trihydric alcohols?

f) How phenols are classified?

g) What is auto oxidation?

h) Give any two postulates of Collision Theory.

i) Why Joule - Thomson effect is zero for an ideal gas?

j) What is Gold number?

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PART - B

Answer any **Five** of the following questions. (5×10=50)

2. a) Write the difference between Bonding Molecular Orbital and Antibonding Molecular Orbital. (4)

   b) Explain Born - Haber Cycle for the formation of Nacl Crystal. (6)

3. a) Discuss any two important reactions of liquid ammonia. (4)

   b) Give any three important reactions of liquid sulphur dioxide. (6)

4. a) Give any two General Methods of preparation of Monohydric alcohols. (4)

   b) Explain mechanism of pinacol-pinacolone rearrangement reaction. (6)

5. a) Give any two methods of preparation of phenols. (4)

   b) Explain the following reactions: (6)

      i. Houlben-Hoesch reaction.

      ii. Landerer Manasse reaction.

      iii. Reimer-Tiemann reaction.

6. a) Give any two methods of preparation of Epoxides. (4

   b) How ethers are prepared and Give two chemical reactions of ethers. (6

7. a) Derive an expression for the rate constant of bi-molecular reaction based o transition state theory. (4

   b) Explain the comparison of collision and transition state theory. (6

8. a) Write a note on Cp and Cv. (4

   b) Explain electrical properties and stability of colloids. (6

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

Time : 3 Hours Max. Marks : 60

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

PART – A

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

a) What are amphoteric solvent ?

b) Define the term ionic bond.

c) What is bond order ?

d) Write the IUPAC name of

i) $CH_3 - CH_2 - \underset{\displaystyle OCH_3}{\underset{|}{CH}} - CH_2 - CH_2 - CH_3$

ii) $CH_3 - CH_2 - O - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_2 - CH_3$

e) How phenols are classified ?

f) What are trihydric alcohol ?

g) Give any two postulates of collision theory.

h) What is auto oxidation ?

i) What is Gold number ?

j) Why Joule-Thomson effect is zero for an ideal gas ?

PART – B

Answer **any five** of the following questions. **(5×10=50)**

2. a) Give the difference between Bonding molecular orbital and Antibonding molecular orbital. **4**

b) Explain Born-Haber cycle for the formation of NaCl crystal. **6**

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3. a) Explain mechanism of pinacol-pinacolone rearrangement reaction.
   b) Give any two general methods of preparation of monohydric alcohols.

4. a) Write any two important reactions of liquid ammonia.
   b) Give any three important reactions of liquid sulphur dioxide.

5. a) Explain any two methods of preparation of phenols.
   b) Explain the following reaction :
      i) Reimer-Tiemann reaction
      ii) Fries rearrangement
      iii) Guttermann synthesis.

6. a) Explain any two methods of preparation of epoxide.
   b) How ethers are prepared and give two chemical reactions of ethers ?

7. a) Explain the comparison of collision and transition state theory.
   b) Give an expression for the rate constant of bi-molecular reaction based o transition state theory.

8. a) Explain electrical properties and stability of colloids.
   b) Give the relation of C_P and C_V.

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(NEP)

B.Sc. III Semester Degree Examination, February/March- 2023

CHEMISTRY

Analytical and Organic Chemistry - II

Paper : D.Sc. - 3

Time : 3 Hours **Maximum Marks : 60**

Instructions to Candidates :

1. Part : A - All questions are compulsory.
2. Part : B - Answer any five full questions.
3. Draw neat labelled diagrams wherever necessary.

PART - A

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

1. a. Define frequency.
   b. State Beer's law.
   c. Write the principle of nephelometry.
   d. Define chromatography.
   e. What are factors affecting the column efficiency?
   f. State Nernst distribution law.
   g. Write Sandmeyer reaction.
   h. How Nitrenes are formed?
   i. What are enantiomers?
   j. What is meant by chirality?

PART - B

Answer any **five** of the following questions. **(5×10=50)**

2. a. Write the applications of nephelometry and turbidimetry. **(4)**
   b. Explain the instrumentation and working of double beam spectrophotometer. **(6)**
3. a. Explain the criteria for the selection of stationary and mobile phase. **(4)**
   b. What is paper chromatography? Explain its theory and applications. **(6)**

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4. a. Derive Nernst distribution law.

   b. Write any six industrial applications of ion - exchange chromatography.

5. a. Explain Pinacol - Pinacolone rearrangement reaction with example.

   b. What are arynes? How they are generated? Explain their stability.

6. a. What is thin layer chromatography? How do you calculate R_f value of a compoun

   b. What are carbanions? How they are formed? Explain Perkins reaction and Cla Schmidt condensation reaction.

7. a. Explain

      i. Crossover experiment.

      ii. Isotopic studies.

   b. Explain the interconversion Fischer projection to Newman projection and Sawhorse projections with example.

8. a. Explain E-Z notations with CIP rules.

   b. Explain the terms.

      i. D and L configuration.

      ii. Racemic mixtures.
