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

## CHEMISTRY

## PAPER-5.2

Time : 3 Hours

Maximum Marks : 80

**Instructions to Candidates:**

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

## SECTION -A

## (Inorganic, Organic and Physical)

1. Answer any TEN of the following.

(10×2=20)

- a) What are double salts? Give examples.
- b) What are polydentate ligands? Give example.
- c) Write the IUPAC name of following.  
(i)  $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$       (ii)  $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
- d) Write any two important features of CFT.
- e) Write the structure of oxine and orthophenanthroline.
- f) What are glycosides?
- g) What are anomers?
- h) Give the classification of terpenoids with example.
- i) Write the structure and uses of atropine.
- j) What are Vitamins? Give example.
- k) State Grothus - Drapper's law.
- l) What is quantum Yield?
- m) What is induced dipole moment?
- n) What are diamagnetic substances?
- o) What are reversible reactions? Give example.

[P.T.O.]





(2)

2/5

11

### SECTION-B

#### (Inorganic)

2. Answer any **TWO** of the following. (2×4)
- a) Explain the Sidgwick theory of E.A.N rule with suitable example.
  - b) Explain the geometrical isomerism in complexes of co-ordination no-4.
  - c) Write the advantages of organic reagent in inorganic analysis and uses of EDTA.
3. Answer any **TWO** of the following. (2×6)
- a) Explain the formation of following complexes on the basis of V.B.T  
 $[\text{Cu}(\text{NH}_3)_4]^{2+}$ ,  $[\text{Ni}(\text{CO})_4]$ .
  - b) Write a note on crystal field stabilization energy (CFSE).
  - c) Write a note on oxine.

### SECTION-C

#### (Organic)

4. Answer any **TWO** of the following. (2×4)
- a) Explain the mechanism of mutarotation.
  - b) Write a note on Isoprene rule.
  - c) What are hormones? Explain the synthesis of thyroxine.
5. Answer any **TWO** of the following. (2×6)
- a) Explain the mechanism of conversion of D(+)-Glucose into D(+)-Mannose.
  - b) Explain the synthesis & structure elucidation at Citral.
  - c) Write a note on Vitamin - A.

### SECTION-D

#### (Physical)

6. Answer any **TWO** of the following. (2×4)
- a) Write the differences between thermal and photochemical processes.
  - b) Explain the influence of electric field on polar substances.
  - c) Explain the Kinetics of reversible reactions.





216

(3)

6

11524

7. Answer any **TWO** of the following.

(2×6=12)

- a) Explain the radiative process in photochemistry with the help of Jablonski diagram.
  - b) Discuss the Kinetics of parallel reactions.
  - c) Discuss the use of dipole moment in structure elucidation of triatomic and tetra atomic molecules with example.
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B.Sc. V Semester Degree Examinations, October/November-2019

**CHEMISTRY**

**Paper : 5.1**

**Time : 3 Hours**

**Maximum Marks : 80**

**Instructions to Candidates:**

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

**SECTION - A**

**(Inorganic, Organic and Physical)**

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

- a) What are organometallic compounds? Give an example.
- b) What are metal carbonyls? Give an example.
- c) Give the applications of Organo lithium compounds.
- d) What are inorganic polymers? Give example.
- e) What are essential elements? Give an example.
- f) What are heterocyclic compounds? Give an example.
- g) Give any one method of preparation of thiophene.
- h) How sulphaguanidine is prepared?
- i) What are thiols and thioethers?
- j) Define finger print region.
- k) Define equivalent conductance.

[P.T.O]



- l) State Le-Chatelier's principle.
- m) What is auto catalysis?
- n) State Kohlrausch's law
- o) What is oscillatory reactions?

### SECTION - B

#### (Inorganic)

2. Answer any Two of the following.

(2×4=)

- a) Explain the biological role of myoglobin and haemoglobin.
- b) Give a method of preparation and properties of organo mercury compound
- c) Write a note on silicons.

3. Answer any Two of the following:

(2×6=)

- a) Explain the different types of inorganic polymers. Distinguish between organ and inorganic polymers.
- b) Explain
  - i) Homogeneous hydrogenation.
  - ii) Nature of bonding in metal carbonyls.
- c) Discuss the role of  $\text{Na}^+$  and  $\text{Ca}^{+2}$  ions in biological process.

### SECTION - C

#### (Organic)

4. Answer any Two of the following.

(2×4=)

- a) Give the preparation of organomagnesium compound and give any <sup>two</sup> synthetic applications.
- b) Write the principle and measurement of U.V. spectroscopy.



c) Explain the molecular orbital picture and aromatic character of pyrrole.

5. Answer any **Two** of the following. (2×6=12)

a) Compare the basicity of pyrrole with pyridine and piperidine.

b) Give the synthesis of

i) Indole by fischer-indole synthesis.

~~ii) Quinoline by skraup synthesis.~~

c) Discuss the principle and measurement of IR spectroscopy.

### SECTION - D

#### (Physical)

6. Answer any **Two** of the following. (2×4=8)

a) How do you determine solubility and solubility product of sparingly soluble salt by conductance measurement?

b) Discuss the Kinetics of acid-base catalysed reaction.

c) Explain the mechanism of B-Z reaction.

7. Answer any **Two** of the following. (2×6=12)

a) Derive Clausius-Clapeyron equation

b) Discuss in detail about pH dependence of rate constant of acid-base catalysed reactions.

c) Write a note on conductometric titrations.

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27523(New)

B.Sc. V Semester Degree Examination, March - 2021

CHEMISTRY

Paper - 5.1

(New)

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

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

## PART - A

(Inorganic, Organic And Physical)

1. Answer the following questions.

(10×1=10)

- 1) What are Inorganic polymers?
- 2) Write any two biological importance of  $\text{Ca}^{2+}$  ions.
- 3) Give any two application of Teflon.
- 4) How Thiophene is obtained from acetylene?
- 5) Write the IUPAC name of
  - a)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{SH}$
  - b)  $\text{CH}_3 - \text{S} - \text{CH}_2\text{CH}_2\text{CH}_3$
- 6) How do you prepare Thiols from Grignard reagent?
- 7) What is Batho chromic Shift?
- 8) Define equivalent conductance.
- 9) What is auto catalysis?
- 10) Define Ionic mobility.

## PART - B

Answer the following any Five questions (each question carries Fourteen marks).

(5×14=70)

2. a) Write any two methods of fixation of nitrogen by natural method. (4)  
b) Discuss the role of  $\text{K}^+$  and  $\text{Na}^+$  ions. (4)  
c) Discuss the structural aspects of Haemoglobin. (6)

[P.T.O.]





3. a) Write any two methods of preparation of Borazole. (4)  
b) Give one method of preparation and two uses of phosphonitayls. (4)  
c) Discuss the preparation of different types of silicones. Give two uses of Silicones. (6)
4. a) Explain the molecular orbital picture and aromatic character of Thiophene. (4)  
b) Give the synthesis of Indole by Fisher - Indole synthesis. (4)  
c) Compare the basicity of pyrrole, pyridine and piperidine. (6)
5. a) How does Thiols reacts with Aldehydes and ketones? (4)  
b) Give one method for the preparation of  
i) Organo zinc compounds and  
ii) Organo lithium compound. (4)  
c) Give the synthesis of Grignard reagent. How does it reacts with Esters and Epoxides. (6)
6. a) Explain the different regions of IR spectrum used for the interpretation of organic compounds. (4)  
b) Explain the different modes of molecular vibrations in IR spectroscopy. (4)  
c) Discuss the Principle and measurement of UV spectroscopy. (6)
7. a) Write a note on conductometric titration of Weak acid and Strong base. (4)  
b) Explain the relation between specific conductance and equivalent conductance. (4)  
c) How do you determine equivalent conductance of strong electrolyte at infinite dilution? (6)
8. a) Explain the originator model of oscillatory reaction. (4)  
b) Explain the mechanism of  $P^H$  dependence Acid-Base catalysed reaction. (4)  
c) Discuss in detail about the kinetics of acid-base catalysed reaction. (6)





27523

**B.Sc. V Semester Degree Examination, February/March 2022**  
**Paper – 5.1 : CHEMISTRY (New)**

Time : 3 Hours

Max. Marks : 80

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

**PART – A**  
**(INORGANIC)**

1. Answer the following questions : (10×1=10)
- 1) What are Inorganic polymers ?
  - 2) Write any two biological importance of  $Mg^{+2}$  ions.
  - 3) Give any two applications of Silicones.
  - 4) Give one method of preparation of pyrrole.
  - 5) Define organomagnesium compounds.
  - 6) Define finger print region.
  - 7) Write the IUPAC name of
    - a)  $CH_3CH_2SCH_2CH_2CH_3$
    - b)  $CH_3-S-CH_2CH_2CH_2CH_3$ .
  - 8) Define specific conductance.
  - 9) What is ionic mobility ?
  - 10) What is autocatalysis ?

**PART – B**

Answer the following any five questions (each question carries fourteen marks) :

2. a) Explain fixation of Nitrogen. 4
- b) Discuss the role of  $Mg^{+2}$  and  $K^+$  ions. 4
- c) Explain the metalloporphyrines with special reference to myoglobin. 6
3. a) Write any two methods of preparation of phosphonitryles. 4
- b) Write any two methods of preparation of silicones. 4
- c) Give synthesis, structural aspects and applications of Borazole. 6

P.T.O.



27523



4. a) Give the synthesis of indole by Fisher-Indole synthesis.  
b) Explain methods of formation and reaction of thiophene.  
c) Explain comparison of basicity of pyrrole, pyridine and piperidine.
5. a) Write any two methods of preparation of organozinc compounds.  
b) Give the chemical reaction and synthesis of organomagnesium compounds.  
c) Explain methods of formation and chemical reactions of thiols and thioethers.
6. a) Discuss the principle and measurement of IR spectroscopy.  
b) Explain the principles of UV spectroscopy.  
c) Explain IR spectroscopy is useful in structure elucidation of simple organic compounds.
7. a) How do you determine equivalent conductance of weak electrolyte at infinite dilution ?  
b) Write a note on conductometric titration of strong acid and a weak acid.  
c) Explain ionic mobility and ionic conductance.
8. a) Describe Brusselator model of oscillatory reactions.  
b) Write a note on autocatalysis.  
c) Explain originator model of oscillatory reactions.



27523(New)

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

CHEMISTRY (New)

Paper : 5.1

Time : 3 Hours

Maximum Marks : 80

*Instructions to Candidates:*

- 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)

1. a) What are trace elements?
- b) What are Silicones?
- c) Give any two applications of Borazole.
- d) Define Heterocyclic compounds.
- e) Give one method of formation of sulphonamide?
- f) What is (UV) ultraviolet spectroscopy.
- g) Give one method of preparation of thiols.
- h) Define specific conductance.
- i) What is autocatalysis?
- j) Define ionic conductivity.

**PART - B**

Answer any Five of the following questions. Each question carries 14 marks.

(5×14=70)

2. a) Discuss the role of  $K^+$  and  $Na^+$  ions. (4)
- b) Write any two methods of fixation of nitrogen by natural method. (4)
- c) Discuss the structural aspects of Haemoglobin. (6)
3. a) Write any two methods of preparation of Borazole. (4)
- b) Write one method of preparation and uses of silicones. (4)
- c) Give two methods of preparation and two uses of phosphonitryls (6)

[P.T.O.]





(2)

27523(New)

4. a) Explain the molecular orbital picture and aromatic character of Furan. (4)  
b) Give the synthesis of quinoline by skraup synthesis. (4)  
c) Give any two methods of formation and reactions of pyrrole and thiophene. (6)
5. a) Give one method of preparation of organo zinc and organo lithium compounds. (4)  
b) Explain the methods of formation and chemical reactions of thioethers. (4)  
c) Give the synthesis of organo magnesium compound's. Give its chemical reactions. (6)
6. a) Explain the different regions of I.R. spectrum used for the Interpretation of organic compounds. (4)  
b) Discuss the principles and measurements of UV spectroscopy. (4)  
c) Explain the different modes of molecular vibrations in IR spectroscopy. (6)
7. a) Write a note on conductometric titration of weak acid and strong base. (4)  
b) Explain the relation between molar conductance and equivalent conductance. (4)  
c) How do you determine equivalent conductance of weak electrolyte at infinite dilution? (6)
8. a) Write the Acid-Base catalysis reaction. (4)  
b) Discuss in detail about the Kinetics of acid-base catalysed reaction. (4)  
c) Explain the mechanism of  $p^H$  dependence acid - Base catalysed reaction. (6)
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