



13DD 44 – V (43)

**B.Sc. V Semester Degree Examination, Nov./Dec. 2013**  
**Paper – 5.1 : CHEMISTRY**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 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)
- What are metal carbonyls ? Give any two examples.
  - Write any two applications of organotin compounds.
  - What is the role of  $\text{Na}^+$  in biological processes ?
  - Write the structure of haemoglobin.
  - What are inorganic polymers ?
  - Give any one method of formation of pyrrole.
  - Draw the molecular orbital picture of furan and write its  $K_b$  value.
  - How are carboxylic acids prepared from Grignard reagents ?
  - Write any one chemical reaction of alkyl sulphonamides.
  - What are chromophores ?
  - State Kohlrausch law.
    - Define molar conductance.
  - Define degree of dissociation and how it will vary with dilution ?
  - What are oscillatory reactions ? Give an example.
  - State the law of mass action.

P.T.O.



## SECTION – B

## (Inorganic)

2. Answer **any two** of the following : (2×4=8)
- Give any two methods of preparation of organomercury compounds.
  - Explain metalloporphyrins taking myoglobin as an example.
  - Write the applications of borazole.
3. Answer **any two** of the following : (2×6=12)
- Give a brief account of metal ethylenic complexes.
  - Write a note on nitrogen fixation.
  - Explain the structural aspects and applications of phosphonitryls.

## SECTION – C

## (Organic)

4. Answer **any two** of the following : (2×4=8)
- How is indole prepared by Fischer indole synthesis ?
    - Write any one chemical reaction of quinoline.
  - Give any one method of formation and any one chemical reaction of Organozinc compounds.
  - Explain conjugated system and aromatic system by taking acetaldehyde and benzaldehyde.
5. Answer **any two** of the following : (2×6=12)
- Compare the basicity of pyrrole with pyridine and piperidine.
  - How are organolithium compounds prepared ?
    - Write any two chemical reactions of thiols.
  - Write a note on :
    - Electronic excitation
    - Finger print region of aromatic compounds.



SECTION - D

(Physical)

6. Answer **any two** of the following :

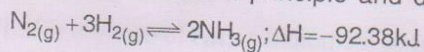
(2×4=8)

- a) How to determine the dissociation constant of a weak electrolyte ?
- b) Write a note on autocatalysis.
- c) Explain the applications of Clausius - Clapeyron equation.

7. Answer **any two** of the following :

(2×6=12)

- a) Define equivalent conductance and explain how it is determined at infinite dilution of a weak electrolyte.
- b) Explain the kinetics of acid-base catalysed reactions.
- c) State Le chatelier's principle and discuss its application for the reaction,





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Paper – 5.2 : CHEMISTRY

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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)
- What is the difference between a complex salt and a double salt ?
  - Write any two important features of CFT.
  - Calculate EAN of iron in  $K_4[Fe(CN)_6]$ .
  - Write any four advantages of using organic reagents in inorganic analysis.
  - Which organic reagent is used to measure total hardness of water and write its structure ?
  - What is mutarotation ?
  - How are glycosides formed ?
  - Write the structure and uses of atropine.
  - What is isoprene rule ?
  - Give the biological importance of vitamins.
  - What is primary process in a photochemical reaction ? Give an example.
  - What is fluorescence ? Give an example.
  - State Crothius-Draper law.
  - Write the Clausius-Mosotti equation and write the terms involved in it.
  - What are parallel reactions ? Give an example.

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SECTION – B  
(Inorganic)

2. Answer **any two** of the following : (2×4=8)
- Explain different types of ligands with examples.
  - Write the Pauling's assumptions of VBT.
  - How is Mg estimated gravimetrically using oxine ?
3. Answer **any two** of the following : (2×6=12)
- Write a note on crystal field stabilization energy.
  - Explain the factors affecting the stability of complexes with examples.
  - Write the structure, preparation, properties and uses of ortho-phenan throline.

SECTION – C  
(Organic)

4. Answer **any two** of the following : (2×4=8)
- Explain the mechanism of osazone formation with an example.
  - What are terpenoids ? Write its occurrence and classification with examples.
  - How is thyroxine synthesised ?
5. Answer **any two** of the following : (2×6=12)
- Explain the ascending and descending of sugar series with suitable examples.
  - Discuss the elucidation of structure and synthesis of nicotine.
  - How is Vitamin C synthesised from D(+)- Glucose ?

SECTION – D  
(Physical)

6. Answer **any two** of the following : (2×4=8)
- Explain the variation of quantum yield with respect to formation of HBr.
  - How is dipole moment measured by temperature method ?
  - Discuss the kinetics of chain reactions.
7. Answer **any two** of the following : (2×6=12)
- Explain non-radiative transitions with the help of Jablonski diagram.
  - Write a note on magnetic properties of molecules.
  - Discuss the kinetics of consecutive reactions.

