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)**

a) What are metal carbonyls ? Give any two examples.

b) Write any two applications of organotin compounds.

c) What is the role of Na^+ in biological processes ?

d) Write the structure of haemoglobin.

e) What are inorganic polymers ?

f) Give any one method of formation of pyrrole.

g) Draw the molecular orbital picture of furan and write its K_b value.

h) How are carboxylic acids prepared from Grignard reagents ?

i) Write any one chemical reaction of alkyl sulphonamides.

j) What are chromophores ?

k) State Kohlrausch law.

l) Define molar conductance.

m) Define degree of dissociation and how it will vary with dilution ?

n) What are oscillatory reactions ? Give an example.

o) State the law of mass action.

P.T.O.

SECTION – B

(Inorganic)

2. Answer **any two** of the following : **(2×4=8)**

   a) Give any two methods of preparation of organomercury compounds.

   b) Explain metalloporphyrins taking myoglobin as an example.

   c) Write the applications of borazole.

3. Answer **any two** of the following : **(2×6=12)**

   a) Give a brief account of metal ethylenic complexes.

   b) Write a note on nitrogen fixation.

   c) Explain the structural aspects and applications of phosphonitrytls.

SECTION – C

(Organic)

4. Answer **any two** of the following : **(2×4=8)**

   a) i) How is indole prepared by Fischer indole synthesis ?

      ii) Write any one chemical reaction of quinoline.

   b) Give any one method of formation and any one chemical reaction of Organozinc compounds.

   c) Explain conjugated system and aromatic system by taking acetaldehyde and benzaldehyde.

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

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

   b) i) How are organolithium compounds prepared ?

      ii) Write any two chemical reactions of thiols.

   c) Write a note on :

      i) Electronic excitation

      ii) 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, $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}; \Delta H = -92.38 kJ$

13DD 44 – V (44)

B.Sc. V Semester Degree Examination, November/December 2013
Paper – 5.2 : 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)**

a) What is the difference between a complex salt and a double salt ?

b) Write any two important features of CFT.

c) Calculate EAN of iron in $K_4[Fe(CN)_6]$.

d) Write any four advantages of using organic reagents in inorganic analysis.

e) Which organic reagent is used to measure total hardness of water and write its structure ?

f) What is mutarotation ?

g) How are glycosides formed ?

h) Write the structure and uses of atropine.

i) What is isoprene rule ?

j) Give the biological importance of vitamins.

k) What is primary process in a photochemical reaction ? Give an example.

l) What is fluorescence ? Give an example.

m) State Crotthus-Draper law.

n) Write the Clausius-Mosotti equation and write the terms involved in it.

o) What are parallel reactions ? Give an example.

P.T.O.

SECTION – B
(Inorganic)

2. Answer **any two** of the following : **(2×4=8)**
   a) Explain different types of ligands with examples.
   b) Write the Pauling's assumptions of VBT.
   c) How is Mg estimated gravimetrically using oxine ?

3. Answer **any two** of the following : **(2×6=12)**
   a) Write a note on crystal field stabilization energy.
   b) Explain the factors affecting the stability of complexes with examples.
   c) Write the structure, preparation, properties and uses of ortho-phenan throline.

SECTION – C
(Organic)

4. Answer **any two** of the following : **(2×4=8)**
   a) Explain the mechanism of osazone formation with an example.
   b) What are terpenoids ? Write its occurrence and classification with examples.
   c) How is thyroxine synthesised ?

5. Answer **any two** of the following : **(2×6=12)**
   a) Explain the ascending and descending of sugar series with suitable examples.
   b) Discuss the elucidation of structure and synthesis of nicotine.
   c) How is Vitamin C synthesised from D(+) – Glucose ?

SECTION – D
(Physical)

6. Answer **any two** of the following : **(2×4=8)**
   a) Explain the variation of quantum yield with respect to formation of HBr.
   b) How is dipole moment measured by temperature method ?
   c) Discuss the kinetics of chain reactions.

7. Answer **any two** of the following : **(2×6=12)**
   a) Explain non-radiative transitions with the help of Jablonski diagram.
   b) Write a note on magnetic properties of molecules.
   c) Discuss the kinetics of consecutive reactions.

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