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

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) Define organometallic compounds. Give examples.

   b) Write the structure

      i) Borazole

      ii) Phosphonitryls

   c) Give the structure of metalloporphyrins.

   d) What are called essential trace elements?

   e) Give the application of organotitanium compound.

   f) What are hetero cyclic compounds? Give examples.

   g) Give two chemical reaction of thiophene.

   h) Write one chemical reaction of organozinc compound.

   i) Define finger print region.

   j) What are the molecular vibrations involved in IR Spectroscopy?

   k) Define equivalent conductance.

   l) State Kohlrausch's law.

   m) Give any two examples of Autocatalysis.

   n) Mention any three conditions of oscillatory reactions.

   o) State law of mass action.

[P.T.O.

SECTION-B

[Inorganic]

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

    a) Explain the bonding and application of organolithium compounds.

    b) Discuss structural aspects of borazole.

    c) Give the comparison of properties of Inorganic with organic polymers.

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

    a) Write a note on nitrogen fixation.

    b) Write a note on Mononuclear carbonyl and the nature of bonding in Metal Carbonyls.

    c) Give the synthesis of phosphonitryls and its application.

SECTION-C

[Organic]

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

    a) Explain Molecular orbital picture and aromatic character of pyrrole.

    b) Write the two preparation and two chemical reactions of thiols.

    c) Give the preparation of organomagnesium compound and one synthetic application.

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

    a) Explain the basicity of Pyrrole with pyridine and piperidine.

    b) Give any two reactions of

        i)   Sulphonamides.

        ii) Sulphonic acids

        iii) Thibethers

    c) Discuss the principle and measurements of UV spectroscopy.

SECTION-D

[Physical]

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

    a) Describe an experiment to determine Ionic mobility of moving boundary method.

b) Explain mechanism of B-Z reaction.

c) Explain the term .

   i) Reaction Isotherm.

   ii) Reaction Isochore.

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

   a) Write a note on conductometric titrations.

   b) Discuss the Kinetics of acid base catalysed reactions.

   c) Explain applications of Clausius Clapeyron equation

      i) Liquid $\rightleftarrows$ Vapour

      ii) Solid $\rightleftarrows$ Liquid

   _____

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. $(10 \times 2 = 20)$

   a) What are double salts? Give examples.

   b) What are polydentate ligands? Give example.

   c) Write the IUPAC name of following.

   (i) $[Cu(NH_3)_4]SO_4$ (ii) $[Co(NH_3)_6]Cl_3$

   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.

SECTION- B

(Inorganic)

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

   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=12)

   a)   Explain the formation of following complexes on the basis of V.B.T

   $[Cu(NH_3)_4]^{2+}$, $[Ni(co)_4]$.

   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=8)

   a)   Explain the mechanism of mutarotation.

   b)   Write a note on Isoprene rule.

   c)   What are harmones? Explain the synthesis of thyroxine.

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

   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=8)

   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.

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.

_____