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BSCCHC 181/BSCCHC 153

**Choice Based Credit System/Credit Based II Semester B.Sc.
Degree Examination, September 2022
(2019-20 Batch Onwards/2018-19 and Earlier Batches)
Paper – II : CHEMISTRY**

Time : 3 Hours

Max. Marks : 80

- Instructions :**
- 1) **A** single booklet containing **40** pages will be issued. **No** additional sheets will be issued. Write question number and subdivision **clearly**.
 - 2) Write the equations and diagram **wherever** necessary.
 - 3) Answer Part – **A** in the **first two** pages of the answer book.
 - 4) Scientific calculators are **allowed**.

PART – A

Answer **any ten** of the following :

(2×10=20)

1. a) What are ionising solvents ? Give example.
b) What are liquid crystals ? Give example.
c) Define critical temperature.
d) Alkali metals are better reducing agents. Why ?
e) Write any two uses of clathrate compounds.
f) What are interhalogen compounds ?
g) Define glass.
h) Mention any two applications of water gas.
i) Write the disadvantages of LPG as motor fuel.
j) What is Kharasch Peroxide effect ?
k) State Markovnikoff's rule.
l) How do you convert ethyl propionate into 1-Propanal ?

P.T.O.



PART – B

Answer **any four** of the following choosing **one full** question from **each** unit. (15×4=60)

Unit – I

2. a) Explain the complex formation reactions in water and liquid ammonia with suitable example. **4**
- b) Write the structural difference between solid, liquid crystal and liquid. **4**
- c) i) Discuss the properties of solution of alkali metals in liquid ammonia. **4**
ii) What is liquid range of a solvent ? Explain with suitable example. **3**
3. a) Explain how dielectric constant of a solvent affects solubility. **3**
- b) Calculate the root mean square, average and most probable velocities of hydrogen gas molecules at 0°C. **5**
- c) i) Explain nematic liquid crystals. **3**
ii) Explain Andrew's P-V isotherms of carbon dioxide . **4**

Unit – II

4. a) How do you prepare XeF_2 ? Write its structure and mention the type of hybridisation of Xenon. **4**
- b) Explain the structure and reducing property of hydroxylamine. **4**
- c) i) Compare the properties of beryllium with those of the other members of the same group. **4**
ii) Discuss the structure of IF_5 . **3**
5. a) Give the structure of orthophosphoric acid, phosphorus acid and meta phosphoric acid. **3**
- b) Discuss the position of hydrogen in the periodic table. **5**
- c) i) Discuss the structures of closo and nido boranes. **3**
ii) Explain the structure of $[\text{BeH}_2]_n$. **4**



Unit – III

6. a) What are the important requirements of optical glass ? **4**
b) Explain the role of gypsum and water in setting of cement. **4**
c) i) Describe the process of manufacture of water gas. **4**
ii) Write a note on safety glass. **3**
7. a) Mention different types of feldspar. **3**
b) What is paint ? Write the characteristics of a good paint. **5**
c) i) Write a note on glazing. **3**
ii) Describe the manufacture of lithopone. **4**

Unit – IV

8. a) What is Baeyer-Villiger oxidation ? Give its mechanism. **4**
b) Explain the mechanism of addition of hydrogen bromide to 1, 3-Butadiene. **4**
c) i) Explain stereospecificity in electrophilic addition of bromine to alkene. **4**
ii) Give the mechanism of addition of osmium tetroxide to alkenes. **3**
9. a) Explain the mechanism of Chichibabin reaction. **3**
b) Write open carbocation mechanism of electrophilic addition of bromine to ethylene. Mention its limitations. **5**
c) i) What is Diel's Alder reaction? Mention its importance. **3**
ii) Give the mechanism for ozonolysis of propylene. **4**
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