B.Sc. 2nd Semester (Latest)

Examination, May-2023

BIO-TECHNOLOGY

Paper - BT-206

Inorganic Chemistry

Time allowed : 3 hours] *[Maximum marks : 40*

Note : *Attempt five questions in all, selecting at least one question from each section.* ***Question no.1 is compulsory.***

1. (a) What kind of hydrogen bonding is present in o-nitrophenol? 8×1=8

(b) Which alkali metal is used in photoelectric cell?

(c) Why do noble gases are monotomic?

(d) What is the oxidation state of Xenon in XeO_4?

(e) What is the shape of IF_5 molecules?

(f) Give cause of anomalous behaviour of Lithium?

(g) What is inorganic benzene?

(h) H_3PO_4 is a tribasic acid, why?

Section-A

2. (a) How does band theory explain electrical conductivity of metals? 4

(b) Discuss the various types of van der Waals forces. 4

3. (a) P-nitrophenol has a higher boiling point than o-nitrophenol. Explain. 2

(b) Discuss intrinsic and extrinsic semiconductors. 3

(c) Give some application of semiconductors. 3

Section-B

4. (a) Draw and discuss structure of XeF_4, $XeOF_4$ and XeO_3. 6

(b) Explain the following:

(i) Li forms normal oxide, Na the peroxide and K the superoxide. 1

(ii) Alkaline earth metals are less electropositive than alkali metals. 1

5. (a) How the hydrides of s-block element act as powerful reducing agents? 2

(b) Write the function of alkaline earth metals in bio- systems. 2

(c) Give the reaction of partial and complete hydrolysis of XeF_6 and also reaction with SiO_2 of XeF_6. 2

(d) Why Xenon forms compounds only with oxygen and fluorine. 2

Section-C

6. (a) Discuss structure and bonding in dibotane (B_2H_6). 3

(b) What are Carbides? Discuss interstitial Carbides. 3

(c) Complete the following reactions:

(i) $B_2H_6 + NaH \rightarrow$

(ii) $B_2H_6 + CO \rightarrow$

7. (a) What are silicones? Give their general method of preparation, properties and uses. 4

(b) Draw the structure of:

(i) P_4O_6 (ii) H_3PO_4

(c) NO is paramagnetic. Explain.

Section-D

8. (a) Why pentahalides are more covalent th trihalides?

(b) Draw the structure H_3PO_2 and HNO_2. Also their basicities.

(c) Differentiate between the structures of v phosphorus and red phosphorus.

(d) Describe the acidic nature of H_2O_2 with su examples.

9. (a) Why Sulphurous acid acts as a reducing ag

(b) Explain why H_2SO_4 is highly viscous?

(c) Oxygen shows an oxidation state -2 in mo compounds whereas other members of family show oxidation of +2, +4 and Explain.

(d) "Halogens are most reactive elements as Comment.