

Roll No.

(07/22-II)

5188

B.Sc. EXAMINATION

(For Batch 2014 & Onwards)

(Second Semester)

CHEMISTRY

Paper IV, CH-104

Inorganic Chemistry

Time : Three Hours

Maximum Marks : 27

Note : Attempt *Five* questions in all, selecting at least *one* question from each Section. Q. No. 1 is compulsory.

1. (a) Why H_2O is liquid while H_2S is gas at room temperature ? 1
- (b) What is doping ? 1
- (c) Name the s-block element present in chlorophyll. 1

- (d) What was the first compound of Xenon prepared by N. Bartlett ? 1
- (e) Draw the structure of Borazine. 1
- (f) Which halogen has highest electron affinity and why ? 1
- (g) What is carborundum ? Give its uses. 1

Section A

2. (a) What are semi-conductors ? Describe *n*-type and *p*-type semiconductors giving suitable example. 3
- (b) Give a brief idea about band theory of metals. 2
3. (a) What are crown ethers and cryptates ? Explain with examples. 3

(b) In group-1, lithium has highest value of Ionization energy yet it is strongest reducing agent in aqueous solution.

Why ?

2

4. (a) Draw and discuss the structures of XeF_6 , XeO_3 , XeOF_4 .

3

(b) Why most of the noble gas compounds involve F and O ?

2

Section B

5. (a) Discuss the structure and bonding in diborane (B_2H_6).

3

(b) What are Carbides ? Explain briefly about covalent carbides.

2

6. (a) What are Silicates ? Draw the structure of cyclic ion $(\text{Si}_3\text{O}_9)^{6-}$.

3

(b) Explain the order of acidity among BF_3 , BCl_3 , BBr_3 and BI_3 .

2

7. (a) Compare the acidic character of HClO , HClO_2 , HClO_3 , and HClO_4 with explanation. 3

(b) Draw the structures of P_4O_{10} and H_3PO_2 . 2