Roll No. .....

(05/16-I)

5188

B. Sc. EXAMINATION

(For Batch 2014 & Onwards)

(Second Semester)

INORGANIC CHEMISTRY

Paper I (CH-101)

Time : Three Hours *Maximum Marks : 27*

Note : Q. No. **1** is compulsory. It carries 7 marks. Attempt *Five* questions in all, selecting at least *two* questions from Sections A and B.

1. (a) Hydrogen bond is weaker or stronger than H-bond ? Comment.

   (b) Which halogen has the highest electron affinity and why ?

   (c) O_2 is diatomic and gaseous in nature. Why ?

(d) Why OF_2 compound is not known ?

(e) BH_4^- and NH_4^+ are isolobal. Explain.

(f) Discuss, which neutral molecule is isoelectronic with with ClO^-.

(g) Why is Bi(V) a stronger oxidant than Sb(V) ?

Section A

2. Water has maximum density at 4°C. Explain.

3. Explain :

   (i) Amongst alkali metals, why lithium regarded as most apt reducing agent in aqueous solutions.

   (ii) The hydroxides and carbonates of Na and K are easily soluble in water while the corresponding salts of Mg and Ca are sparingly soluble.

4. How are XeO_3 and $XeOF_4$ prepared ? Describe their molecular shapes.

Section B

5. Explain and arrange the following in the order of property indicated for each set :

   (i) F_2, Cl_2, Br_2, I_2.....increasing bond dissociation energy

   (ii) HF, HCl, HBr, HI.....increasing acid strength

   (iii) NH_3, PH_3, AsH_3, SbH_3, BiH_3..... increasing base strength..

6. Why is nitrous acid oxidant as well as reductant ?

7. Give reasons :

   (i) for least reactivity of N_2 molecule.

   (ii) on being slowly passed through water, PH_3 forms bubbles but NH_3 dissolves.