Roll No. .....

21261

B. Sc. Chemistry (Hons.) 2nd Semester Examination – May, 2019

INORGANIC CHEMISTRY

Paper : CH(H)-201

Time : Three Hours] *[Maximum Marks : 40*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all. Question. No. **1** is ***compulsory***. Select ***one*** question from each Section

1. (a) Name the Radioactive element in group-1. $1 \times 8 = 8$

(b) Name the Acid radical which do not reacts with dil. and conc. H_2SO_4.

(c) Define Solubility product.

(d) Name the Strongest reducing agent in group-1.

(e) Which element shows inert pair effect in group-13 ?

(f) Which element has highest electron affinity in group-17 ?

(g) What is the shape of XeF_2 ?

(h) What is the formula of Diborane ?

SECTION – I

2. (a) Fill in the blanks : 4, 2, 2

(i) The ..... is the hardest element in group-1 of periodic table.

P. T. O.

(ii) The ..... can form peroxide in group-I of periodic table.

(iii) The Alkaline earth metals have ..... valence shell configuration.

(iv) The carbonates of ..... and ..... in group- 2 of periodic table are unstable towards heat.

(b) Why *Be* and *Mg* gives no colour in flame ?

(c) Explain the order of basicity among group-1 hydroxides in the periodic table.

3. (a) Why 1st ionization energy of group-2 elements is higher than group-I elements while 2nd ionization energy of group-I elements is higher than group-2 elements ? 2, 2, 2, 2

(b) Define diagonal relationship with an example.

(c) Out of *Be* or *Mg*, which has lowest ionistaion energy and why ?

(d) Why lithium is the strongest reducing in the group-1 of periodic table ?

SECTION – II

4. (a) Fill in the blanks :

(i) The basic radicals in group-IV is/are ..... in inorganic analysis.

(ii) The group reagent for group-II of basic radicals is ..... in inorganic analysis.

(iii) The brown ring test is used for the detec of ..... ion in inorganic analysis.

(iv) The formula of Nessler's reagent is .....

(b) What is the function of NH_4Cl in group-III basic radicals ?

(c) Explain the Lime water test of carbonate ion their reaction.

5. (a) Explain the Ammonium molybdate test phospahte ion with their reaction. 2, 2,

(b) What is the function of NH_4OH as group rea in group-IV of basic radicals ?

(c) How sulphite ion is detected in presence thiosulphate ion ?

(d) Give differences in between post-precipitation co-precipitation.

SECTION – III

6. (a) Fill in the blanks :

(i) The boric acid on reaction with .... gives triethyl borate.

(ii) The H_2SO_4 is called sulphuric acid wh ..... is called Marshall's acid.

(iii) The ..... never shows positive oxidat in the periodic table.

(iv) The ..... shows maximum catenation group-I 6 of periodic table.

(v) The ..... is oxidation state of nitrogen ammonium nitrate.

(b) Why H_2O is liquid while H_2S is a gas ?

(a) Define inert pair effect with example. What is its cause ? 2, 2, 2, 2

(b) Explain the acidity order among the group-17 hydrides.

(c) Explain the basicity order among the group-15 hydrides.

(d) Explain the anomalous behavior of Nitrogen in Group-15.

SECTION – IV

(a) Fill in the blanks : 3, 3, 2

(i) The hybridization of central atom in XeF_2 and XeO_3 is ..... and ..... respectively.

(ii) The C_{60} fullerene contains ..... pentagons ..... hexagons.

(iii) The silicates contains ..... repeated tetrahedral unit.

(b) Explain the structure of diborane.

(c) Why inter-halogen compounds are more reactive than halogens(except fluorine).

(d) Explain the Neil Bartlett experiment. 2,2,2,2

(e) Explain the hybridization/shape of :

(i) XeF_4 (ii) XeF_6

(f) Explain the following with structure :

(i) Cyclic silicates

(ii) Chain silicates

(g) Explain the order of solubility among the group-18 elements in the periodic table .