(i) Printed Pages : 3 Roll No. .....

(ii) Questions : 9 Sub. Code : 0 3 5 0

Exam. Code : 0 0 0 4

B.A./B.Sc. (General) 4th Semester

(2054)

CHEMISTRY

(Same for B.Sc. Microbial & Food Technology)

Paper : XIII (Inorganic Chemistry-B)

Time Allowed : Three Hours] **[Maximum Marks : 22**

Note :— Attempt **five** questions in all, including Question No. **1** which is compulsory and selecting **one** question from each unit.

(Compulsory Question)

1. Attempt the following :

(a) Out of $La(OH)_3$ and $Lu(OH)_3$ which is more basic and why ?

(b) Tell the most important ore of Uranium.

(c) Write formula of conjugate base of $[H_2PO_4]^-$.

(d) $HgI_2 + KI \xrightarrow{\text{Liquid } SO_2} ?$

(e) Write the general electronic configuration of actinides.

(f) Tell oxidation number of S in $Na_2S_4O_6$. 1×6

UNIT—I

2. (a) Discuss the extraction of lanthanides from monazite.

   (b) What is lanthanide contraction ? Write its cause and consequences. 2,2

3. (a) How will you separate neptunium, plutonium and americium from uranium ?

   (b) Differentiate between lanthanides and actinides in tabular form. 2,2

UNIT—II

4. (a) Explain Bronsted-Lowry concept of acids and bases.

   (b) Explain with justification the decreasing order of lewis acid strength of BF_3, BCl_3 and BBr_3. 2,2

5. (a) How does the relative strength of an acid vary with oxidation number of the central atom ?

   (b) Arrange HClO, $HClO_2$, $HClO_3$ and $HClO_4$ in decreasing order of acidic strength with justification. 2,2

UNIT—III

6. (a) Discuss in detail the Frost diagram of manganese in acidic medium.

   (b) Explain the redox stability of metal ions in water. 2,2

7. (a) What is disproportionation ? Discuss with help of example.

   (b) Explain the principles involved in the extraction of the elements during redox reactions. 2,2

UNIT—IV

8. (a) Complete and balance the following equations :

(i) $HgI_2 + KNH_2 \xrightarrow{\text{Liquid } NH_3} ?$

(ii) $SbCl_3 + LiI \xrightarrow{\text{Liquid } SO_2} ?$

(b) Define Protonic and Non-Protonic solvents with examples. 2,2

9. (a) Write any two protolysis reactions occurring in liquid NH_3 acting as non-aqueous solvent.

(b) Why solutions of alkali metals in liquid ammonia are blue coloured and conducting ? Justify. 2,2