

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

(ii) Questions : 9 Sub. Code : 

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Exam. Code : 

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**B.A./B.Sc. (General) 4<sup>th</sup> 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  $\text{La}(\text{OH})_3$  and  $\text{Lu}(\text{OH})_3$  which is more basic and why ?

(b) Tell the most important ore of Uranium.

(c) Write formula of conjugate base of  $[\text{H}_2\text{PO}_4]^-$ .

(d)  $\text{HgI}_2 + \text{KI} \xrightarrow{\text{Liquid SO}_2} ?$

(e) Write the general electronic configuration of actinides.

(f) Tell oxidation number of S in  $\text{Na}_2\text{S}_4\text{O}_6$ . 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

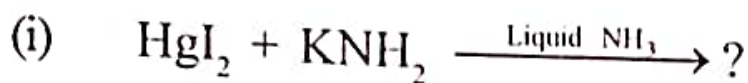
4. (a) Explain Bronsted-Lowry concept of acids and bases.  
(b) Explain with justification the decreasing order of lewis acid strength of  $\text{BF}_3$ ,  $\text{BCl}_3$  and  $\text{BBr}_3$ . 2,2
5. (a) How does the relative strength of an acid vary with oxidation number of the central atom ?  
(b) Arrange  $\text{HClO}$ ,  $\text{HClO}_2$ ,  $\text{HClO}_3$  and  $\text{HClO}_4$  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 :



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

9. (a) Write any two protolysis reactions occurring in liquid  $\text{NH}_3$  acting as non-aqueous solvent.

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