Exam.Code:0004
Sub. Code: 0350

2061

B.A./B.Sc. (General) Fourth Semester

Chemistry

Paper – XIII: Inorganic Chemistry – B

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

Time allowed: 3 Hours Max. Marks: 22

***NOTE:*** *Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.*

*x-x-x*

I. Attempt the following:-

a) Write a general electronic configuration of actinides.

b) Out of $Ca(OH)_3$ and $Lu(OH)_3$ which is more basic?

c) Which lanthanide element is radioactive?

d) Write formula of conjugate base of $HSO^-_4$

e) $PbI_2 + KNH_2 \xrightarrow[NH_3]{liquid} ?$

f) Tell oxidation number of S in $Na_2S_2O_3$. (6x1)

## UNIT - I

II. a) Discuss the extraction of lanthanides from monazite.

b) What is lanthanide contraction? Write its cause and consequences. (2x2)

III. a) How will you separate Neptunium, Plutonium and Americium from Uranium?

b) What are later actinides? Give the points of similarity between later lanthanides and later actinides. (2x2)

## UNIT - II

IV. a) Describe LUX - FLOOD concept of acids and bases with examples. Also write its applications.

b) Discuss decreasing order of Lewis acid strength of $BF_3$, $BCl_3$ and $BBr_3$ with complete justification. (2x2)

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V. a) Out of $NF_3$ and $NH_3$ which is more strongly basic and why?

b) Discuss solvent system concept of acids and bases. (2x2)

## UNIT - III

VI. a) Discuss completely the Frost diagram of manganese in acidic medium.

b) Discuss completely the principles involved in the extraction of the elements during redox reactions. (2x2)

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

b) Explain the redox stability of metal ions in water. (2x2)

## UNIT - IV

VIII. a) Write any to protolysis reaction occurring in liquid ammonia acting as non aqueous solvent.

b) Define protonic and non protonic solvent with examples. (2x2)

IX. a) Complete and balance the following equation

i) $AgNO_3 + KNH_2 \xrightarrow{liquid\ NH_3} ?$

ii) $SbCl_3 + KCl \xrightarrow{liquid\ SO_2} ?$

b) Why solutions of alkali metals in liquid ammonia are conducting and blue coloured. Justify. (2x2)

x-x-x