

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

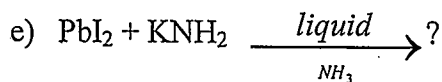
Max. Marks: 22

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 $\text{Ca}(\text{OH})_2$ and $\text{Lu}(\text{OH})_3$ which is more basic?
- c) Which lanthanide element is radioactive?
- d) Write formula of conjugate base of HSO_4^-



- f) Tell oxidation number of S in $\text{Na}_2\text{S}_2\text{O}_3$. (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 two 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) $\text{AgNO}_3 + \text{KNH}_2 \xrightarrow{\text{liquid NH}_3} ?$
ii) $\text{SbCl}_3 + \text{KCl} \xrightarrow{\text{liquid SO}_2} ?$
b) Why solutions of alkali metals in liquid ammonia are conducting and blue coloured. Justify. (2x2)

x-x-x