

(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) 4th Semester
(2055)

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 Q.No. 1, which is compulsory and selecting **ONE** question from each unit.

(Compulsory Question)

1. Attempt the following :

(a) Why does uranium form oxygenated ions such as UO_2^+ ?

(b) Why do Zr and Hf have similar properties ?

(c) Which lanthanide element is radioactive ?

(d) Write formula of conjugate acid of SO_4^{2-} .

(e) $\text{PbI}_2 + \text{KNH}_2 \xrightarrow{\text{Liquid NH}_3} ?$

(f) Tell oxidation number of Cr in $\text{Na}_2\text{Cr}_2\text{O}_7$. 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) What are Later Actinides ? Give the points of similarity between later actinides and later lanthanides. 2,2

UNIT-II

4. (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. 2,2
5. (a) Out of NH_3 and NF_3 which is more strongly basic and why ?
(b) Discuss solvent system concept of acids and bases. 2,2

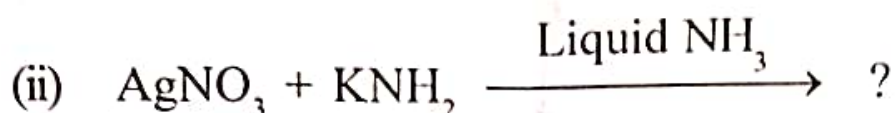
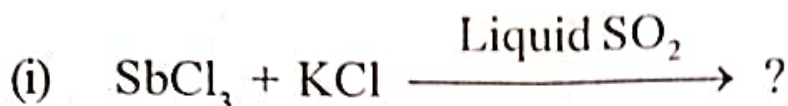
UNIT-III

6. (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. 2,2

7. (a) What is disproportionation ? Discuss with help of example.
(b) Write in brief about Pourbaix diagram. 2,2

UNIT-IV

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



- (b) Why solutions of sodium metal in liquid ammonia are conducting and blue coloured ? Explain properly. 2,2

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

- (b) Define protonic and non-protonic solvents with examples.

2,2