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B. Sc. EXAMINATION

(Fourth Semester)

CHEMISTRY

CH-204

Inorganic Chemistry

: *Three Hours* *Maximum Marks* : 27

: Q. No. 1 is compulsory. Attempt any *four* questions by selecting *one* question from each Section.

i) Which Lenthanide is Radioactive ?

ii) Which Trivelent Lenthanide ion has greenish colour ? Praseodymium

iii) Name the lenthanide ion which acts as an oxidising agent in acidic medium ? Ce^{4+}

iv) Which element of the actinide series has the highest melting and boiling points ?

P.T.O.

(v) Give the general electronic configuration of actinides.

(vi) Calculate the solubility of $Mg(OH)_2$ in moles/litre if the solubility product of $Mg(OH)_2$ is 5×10^{-12}.

(vii) Which color produces when sodium nitroprusside is added in a solution containing sulphide radical ? $1\times7=7$

Section A

2. (a) Explain the role of 'Lanthanide Contraction' observed in Lanthanides. Compare the important properties of Lanthanides with those of actinides. 3

(b) Why basic strength of Lanthanide oxides, M_2O_3 decreases with rise in atomic number. 2

3. (a) Compare the following properties of Lanthanides with those of transition metals : 3

(i) Magnetic Properties

(ii) Colour and Spectra

(iii) Complex Formation.

(b) Sketch the flowchart diagram for extraction of Lanthanides from Monazite sand. 2

4. (a) Give the chemistry of the main principles of separation of Uranium from NP, Pu and Am. 4

(b) What are trans-uranic elements ? 1

Section B

5. (a) A student mixes equal volumes of M/100 ACl_2 and M/200 ZnX. Will he get the precipitate of AX ? (K_{sp} of AX = 1.5×10^{-8}) ? Explain. 3

(b) What is Common ion effect ? Explain with a suitable example. 2

6. Describe the theory of : 2,1,2

(a) Lake Test for Aluminium

(b) DMG Test for Nickel

(c) Chromyl Chloride Test for Chlorides.

(a) NH_4OH and not NaOH is used as a precipitant in the qualitative analysis of 3rd group

(b) Cu^{+2} is not precipitated as CuS when H_2S gas is passed through a solution containing excess of CN^- ions.

(c) Cettan of IVth group are not precipitated as their sulphide in acidic solution.