

Roll No. ....

(07/21-II)

**5212**

**B. Sc. EXAMINATION**

(For Batch 2011 & Onwards)

(Fourth Semester)

**CHEMISTRY**

**CH-204**

**Inorganic Chemistry**

*Time : Three Hours*

*Maximum Marks : 27*

**Note :** Q. No. 1 is compulsory. Attempt any two questions from each Section.

- (i) Write the electronic configuration of  $Tm^{+2}$  ( $Z = 69$ ).
- (ii) Which element will give coloured ion  $Lu^{+3}$  or  $Ho^{+3}$ .
- (iii) What is the general electronic configuration of actinides ?

- (iv) Which actinide element has the highest melting and boiling point ?
- (v) Name the group reagent for basic radicals of group III.
- (vi) Name the reagent used for the detection and estimation of Nickel.
- (vii) Write the names of three acidic radicals which evolve gas with dilute sulphuric acid. 1×7=7

**Section A**

2. (a) How will you explain the colour and spectral properties of lanthanides ? 3  
(b) Which is more basic  $La(OH)_3$  or  $Lu(OH)_3$  and why ? 2
3. (a) What is actinide contraction ? How will you compare this contraction with that of Lanthanide contraction ? Which is more dominating ? 3

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- (b) What are transuranic elements ? Why are these elements unstable ? 2
4. (a) Discuss the ion-exchange method used for the separation of lanthanides. 2
- (b) Comment on the oxidation states of actinides. 3

### Section B

5. (a) Explain the solubility product and common ion effect. 3
- (b) Discuss the chemistry of Chromyl Chloride Test. 2
6. (a) Explain the terms precipitation, co-precipitation and post precipitation. 3
- (b) How will you distinguish  $\text{CO}_3^{2-}$  and  $\text{HCO}_3^-$  ? 2

7. (a) Explain the test for chloride ions under the strong sulphuric acid. 2
- (b) Write the test for the detection of  $\text{Ni}^{2+}$  ions in a solution. 1
- (c) Why cations of group VI constitute an independent group ? 2