

Roll No.

(09/20-I)

5212

B. Sc. EXAMINATION

(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.

1. (i) Write the electronic configuration of Sm($Z = 62$) and Gd($Z = 64$).
- (ii) Name the element of lanthanides series which does not occur in nature.
- (iii) Write the electronic configuration of Np^{+4} .

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- (iv) Name the important ore of Uranium.
- (v) What are the basic radicals in Group I of qualitative analysis ?
- (vi) What happens when ionic product of a salt exceeds the solubility product ?
- (vii) What is the colour of copper sulphide and hydrated copper sulphate ? $1 \times 7 = 7$

Section A

- 2. (a) What is lanthanide contraction ? Give its three consequences. 3
- (b) Calculate the magnetic moment of Gd^{3+} ion in Bohr Magneton $Gd(Z = 64)$. 2
- 3. (a) Give the details of the following two methods used for the separation of Neptunium, Plutonium and Americium from Uranium (a) ion exchange method (b) stability of oxidation states. 3

- (b) As compared to lanthanides it is difficult to explain the magnetic properties of actinides. Why ? 2
- 4. (a) Comment on the various oxidation states of lanthanides. 3
- (b) "Actinides display greater tendency to form complexes than lanthanides." Comment. 2

Section B

- 5. Explain the following :
 - (a) Match Stick Test 1
 - (b) Lake Test 2
 - (c) Chromyl Chloride Test. 2
- 6. (a) Differentiate between post precipitation and co-precipitation. 2
- (b) How will you detect Ni^{2+} in the presence of Co^{2+} ? 2
- (c) Explain Neslar Reagent Test. 1

7. (a) Explain application of idea of solubility product of quantitative analysis. 2
- (b) How do you detect Nitrate in presence of Nitrite ? 1
- (c) How will you detect carbonate ions in the presence of Sulphite ions in a mixture ? 2