Roll No. .....

(07/22-II)

5212

B. Sc. EXAMINATION

(Fourth Semester)

CHEMISTRY

CH-204

Inorganic Chemistry

Time : Three Hours *Maximum Marks : 27*

Note : Attempt *Five* questions in all, selecting at least *two* questions from each Section. Q. No. 1 is compulsory.

1. (a) Which is more basic : Gd_2O_3 or YbO and why ? 1

(b) What are transuranic elements ? 1

(c) Name the actinide ions which are colourless. 1

(d) Write general electronic configuration of lanthanides. 1

(e) Name *two* basic radicals which give flame test. 1

(f) What is co-precipitation ? 1

(g) Write the name of precipitating agent for group-IV radicals. 1

Section A

2. (a) Discuss the following : 3

(i) Complex formation

(ii) Colour of ions in case of lanthanides.

(b) Why is Europium (II) more stable than Cerium (II) ? 2

3. (a) Discuss ion exchange method for separation of lanthanides. 3

(b) Actinides form oxo-cations but lanthanides do not. Explain. 2

4. (a) Write a note on actinoid contraction. 3

(b) Differentiate between lanthanide and actinides. 2

Section B

5. (a) Describe the theory and chemistry of the following tests : 3

(i) Borax bead test

(ii) Ring test for nitrate.

(b) How can you detect CO_3^{2-} in presence of SO_3^{2-} ? 2

6. (a) Explain the following : 3

(i) Role of HCl in the group-II analysis

(ii) Role of NH_4Cl in the group-III analysis.

(b) Explain the importance of common ion effect in qualitative analysis. 2

7. (a) Explain Zirconyl nitrate method for removing interfering radicals. 3

(b) Describe essential conditions for pure precipitation. 2