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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

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- (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

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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