



4. a) What is the lanthanide contraction? What are the causes and consequences of lanthanide contraction. 5
- b) Explain actinide series elements with respect to 5
- i) Electronic configuration.
  - ii) Atomic and ionic radii.

**OR**

- c) Discuss electronic configuration of lanthanides. 2½
  - d) Describe ion exchange method for separation of lanthanide. 2½
  - e) Discuss lanthanides with respect to their complex formation tendency. 2½
  - f) Write note on position of actinide in periodic table. 2½
5. Attempt **any ten** questions. **1x10**  
**=10**
- i) Draw the structure of diborane.
  - ii) Draw the structure of  $\text{ICl}_4^-$
  - iii) What are silicates?
  - iv) Draw band structure of conductor.
  - v) Define Coordination number.
  - vi) Define solvation energy.
  - vii) Write electronic configuration of Ru.
  - viii) Why  $\text{Cu}^{2+}$  coloured and paramagnetic?
  - ix) Calculate the Magnetic moment of  $\text{Mn}^{2+}$  ion.
  - x) Name any two important minerals of lanthanides.
  - xi) What do you mean by transuranic elements?
  - xii) Why Zn and Hf are called twins elements?

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