

Question Bank of d & f block

Very short answer type questions:- each carry 1 mark.

Q.1. Among the lanthanides, Ce(III) can be easily oxidized to Ce(IV). Explain.

Q.2. What is the basic difference between the electronic configuration of transition metals and inner transition elements.

Q.3. Why is separation of lanthanides difficult?

Q.4. Why are the ionization energy of 5d elements than those of 3d elements.

Q.5. Why copper considered a transition metal.

Short answer type question:- each carry 2 marks.

Q.1. Account for the following:-

- I. Zn, Cd & Hg are not considered as transition metals.
- II. Zn^{2+} salts are white while Cu^{2+} salts are blue.

Q.2. Explain Solution of

- I. Colour of $\text{K}_2\text{Cr}_2\text{O}_7$ depends on the pH of solution.
- II. $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ is coloured but $[\text{Sc}(\text{H}_2\text{O})_6]^{3+}$ is colourless .

Q.3. What happens when

- I. $\text{K}_2\text{Cr}_2\text{O}_7$ react with an acidified solution of FeSO_4 ?
- II. KMnO_4 react with an acidified solution of KI?

Short answer type question:- each carry 3 marks.

Q.1. (i) What is lanthanoid contraction? Explain its causes.

(ii) Out of Fe^{2+} and Fe^{3+} , which is more paramagnetic and why?

(iii) Why do transition metals form coloured compound?

Q.2. Explain

- I. Transition elements have high melting point and boiling point.
- II. Transition elements exhibit variable oxidation states.

III. A transition metal forms alloys with other transition elements.

Long answer type question:- carry 5 marks.

Q.1. What happens when lanthanoid elements:

- a) Burn in oxygen.
- b) Heated with Sulphur .
- c) Heated with Carbon.
- d) React with H_2O .
- e) Heated with N_2 .

Answers:-

Very short answer questions:-

Q.1. To acquire nearest noble gas configuration.

Q.2. In transition elements electron enter into penultimate shell and in inner transition elements electron enter into antepenultimate shell.

Q.3. almost same ionic radii.

Q.4. Poor shielding effect of f-orbital electrons.

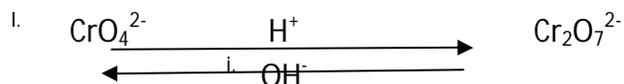
Q.5. Because in one of its oxidation state it has partly filled d orbital.

Short answer type questions:-

Ans. 1.

- I. Fully filled d-orbitals in its elemental state as well as in its common oxidation state.
- II. No d-d transition in Zn^{2+} but in Cu^{2+} there is d-d transition.

Ans.2.



- II. Because in Sc^{3+} complex there is not any d-d transition possible but in Ti^{3+} it is possible.

Ans. 3.

- I. Ferrous ion is converted into ferric ion.

II. Iodine is liberated.

Short answer type Question:-

Ans. 1.

- I. Almost same size of II and III transition series elements, Poor shielding effect of f-orbital electrons.
- II. Fe^{3+}
- III. Due to d-d transition.

Ans. 2.

- I. Due to strong metallic bonds
- II. Because of availability of d and s orbital electrons
- III. Because of almost same size

Long ans type Ques.

Ans.

- I. Ln_2O_3
- II. Ln_2S_3
- III. Ln_2C_3
- IV. $\text{Ln}(\text{OH})_3$
- V. LnN

