

**CBSE Class 12 physics**  
**Important Questions**  
**Chapter 8**  
**The d- and f- Block Elements**

**3 Marks Questions**

**1. Transition metals generally form coloured ions. Why? Which of the following will be colored?  $Sc^{3+}$ ,  $V^{2+}$ ,  $Mn^{2+}$ ,  $Cu^{+}$ ,  $Ni^{2+}$ .**

**Ans.** Transition metals form coloured ions due to d-d transition. Coloured ions will be those which have unpaired electrons.

$Sc^{3+}$	$3d^0$	Colourless
$V^{2+}$	$3d^3$	Coloured
$Mn^{2+}$	$3d^5$	Coloured
$Cu^{+}$	$3d^{10}$	Colourless
$Ni^{2+}$	$3d^8$	Coloured.

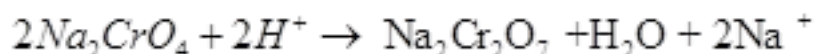
**2. Explain the steps of preparation of potassium dichromate?**

**Ans.** Preparation of potassium dichromate takes place in three steps.

Step 1: Fusion of chromite ore with sodium or potassium carbonate in free excess of air.



Step 2: Conversion of Sodium Chromate to Sodium Dichromate by acidifying it.



Step 3: Conversion of sodium dichromate to potassium dichromate by reaching it with KCl.



**3. What is the lanthanoid contraction? What are its causes and consequences?**

Ans. Lanthanoid contractions – The cumulative effect of the regular decrease in size or radii of Lanthanoid with increase in atomic number is called Lanthanoid contraction.

Causes - The shape of f orbitals is diffused. They have poor shielding effect due to which the effective nuclear charge increase with increase in atomic number. This causes a decrease in atomic radii

Consequences – Due to Lanthanoid contraction-

1. Radii of the members of the third transition series is similar to those of second transition series.
2. It becomes difficult to separate Lanthanoids.