

India's Number 1 Education App

CHEMISTRY

JEE (MAIN AND ADVANCED) CHEMISTRY

ELEMENTS OF D - BLOCK



1. What are coinage metals ? Are they transition

elements?

2. Which element has pseudo inert gas electronic configuration?

View Text Solution

3. Elements with the general electronic configuration $(n-1)d^3ns^2$ belong to which

group in the modern periodic table ?

4. Among Cu, Ag, Zn and Cd which one is the

biggest atom? why?



5. Why the decrease in atomic radius amongst a

series of transition elements is less when

compared with representative elements ?



6. Among 3d - , 4d - and 5d - serieselements, which elements has the least and which has the highest I_l ?

Watch Video Solution

7. Name a transition metal which does not

exhibit variable oxidation states.

View Text Solution

8. Among ferrous and ferric ions, which one is

more stable? Why?



9. Arrange the MnO_4^- and VO_2^+ ions in the

increasing order of their oxidising power.

Watch Video Solution

10. $FeCl_3$ is known but not Fel_3 Why?





11. Why is ${\it Cr^{2\,+}}$ acts as reductant and ${\it Mn^{3\,+}}$ as

oxidant eventhough both have d^4 configuration

?

Watch Video Solution

12. Which is a stronger reducing agent among

 ${\it Cr}^{2\,+}$ and ${\it Fe}^{2\,+}$? Why ?

13. Why Ti^{3+} and Cr^{2+} are readily oxidised in air? View Text Solution

14. Why is the E^{Θ} value for the Mn^{3+}/Mn^{2+} couple much more position than that for Cr^{3+}/Cr^{2+} or Fe^{3+}/Fe^{2+} ? Explain.

15. What is the value of one Bohr magneton in

S.I. units?

View Text Solution

16. Calculated spin only magnetic moment of

 Cr^{x+} is 4.9 BM. Find the 'x' value.

17. Calculate the spin only magnetic moment of

 Ti^{3+} in C.G.S unit

Watch Video Solution

18. CaCl is colourless, while $CuSO_4.5H_2O$ is

coloured. Explain?

19. Eventhough Cu^{2+} has one unpaired d electron, anhydrous copper sulphate is colourless. Why?

Watch Video Solution

20. Au(I) is diamagnetic, while Au(III) has a magnetic moment of 2.95 BM. Predict the colour

of aurous and auric ions?

21. Give some examples of the ions which are

coloured but diamagnetic in nature.



22. Potassium dicharomate solution is used to

test drunker driver? Discuss.

Watch Video Solution

23. Vanadium pentoxide is coloured. Why?

View Text Solution

24. Comment on the inter-conversion of

dichromate and chromate

Watch Video Solution

25. What is chemical volcano?

26. How many moles of $KMnO_4$ are required to

oxidise one mole of ferrous oxalate in acidic medium ?



27. Why manganate ion $\left(MnO_4^{2\,-}
ight)$ undergo

disproportionation in acidic solutions.

28. Nitric acid is not suitable to acidify potassium permanganate. Why?
Watch Video Solution

29. Variability in the oxidation states of

lanthanides is limited. Why?

30. In lanthanide series, which element is well

known to exhibit +4 oridation state ? Why?

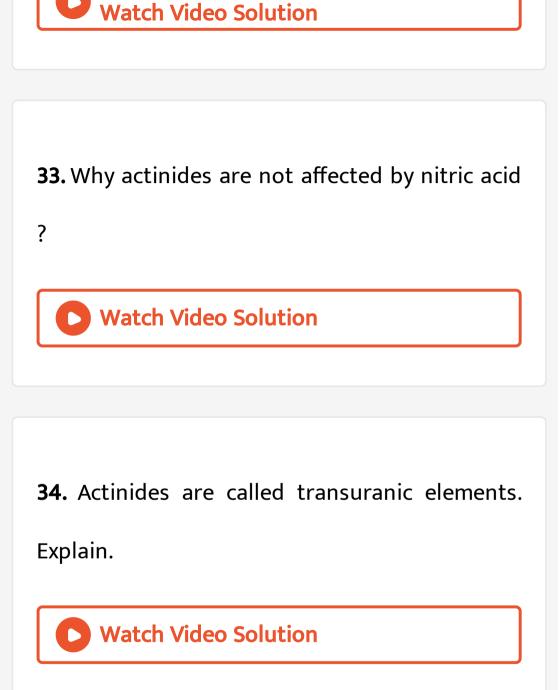


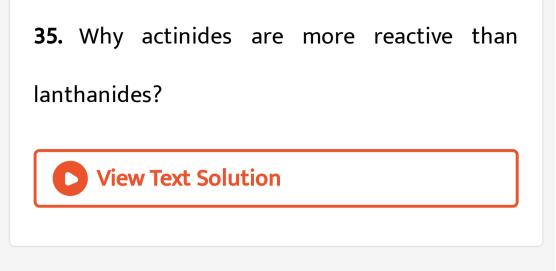
31. Why \ln^{2+} ions are reductants and \ln^{4+} are oxidants ?

Watch Video Solution

32. What are the hydrolysis products of $\ln C_2$?







36. Complex compounds of transition metals are familier, but not inner transition elements. Why?



1. Define transition elements. Give the names and symbols of the metals of the first transition series.



2. Write the electronic configuration of the

elements of first transition series.

3. Name some d-block elements which have anamolous electronic configurations. Give their outer shell configurations.

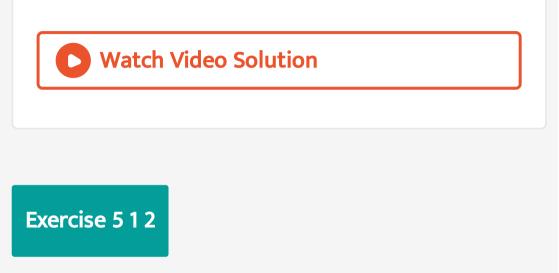


4. Write the configuration of Cut, `Cu^(+),

Co⁽²⁺⁾, Mn⁽²⁺⁾,

5. Name the minerals of manganese and iron.

Write their composition.



1. How does manganese show its variable

oxidation states?

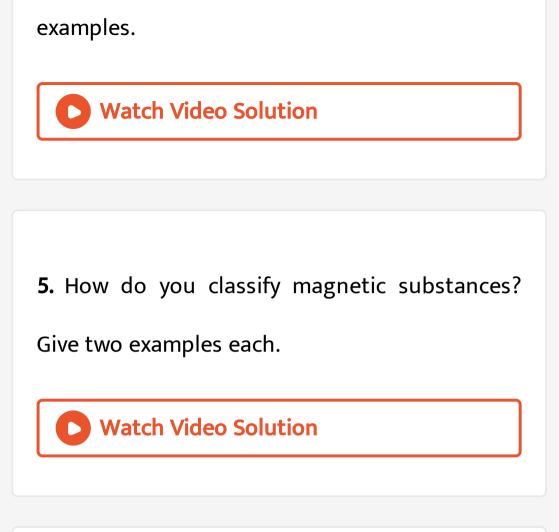


2. The atomic radius along the 3d series decreases. Explain on the basis of their electron configuration.
Watch Video Solution

3. The colour of $ig[Ti(H_2O)_6ig]^{3\,+}$ is due to

Watch Video Solution

4. How does a catalyst work in a chemical reaction? Discuss the catalysis with suitable



6. What do you understand by non-stoichio

metric compounds?



7. What are alloys? How are they prepared?



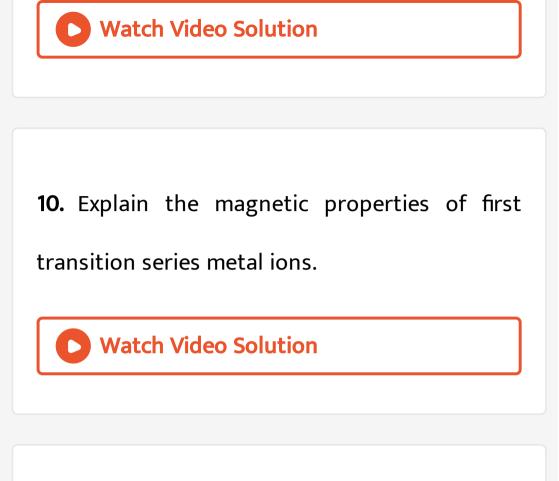
8. Mention any four alloys with composition and

uses.



9. Discuss the colour of the transition metal

compounds with suitable examples.



11. Wtite the characteristic properties of

transition elements.



12. Transition elements have high melting

points. Why?



13. $CuSO_4$. $5H_2O$ has pale blue colour while

 $ZnSO_4, 7h_2O$ is white. Discuss.

> Watch Video Solution

14. Predict which of the following will be coloured in aqueous solution?

 $Ti^{3+}, V^{3+}, Cu^+, Sc^{3+}, Mn^{2+}, Fe^{3+}$ and Co^{2+}

. Give reasons for each



15. The most common oxidation state of first

transition series is +2. Explain.

Watch Video Solution

16. Write the characteristic properties of transition elements.

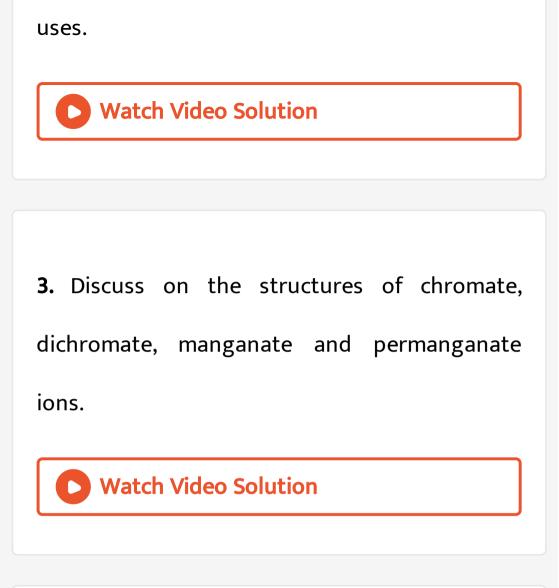


Exercise 513

1. How the acidic nature, covalent character changes with the oxidation state for oxides of a transition metal.

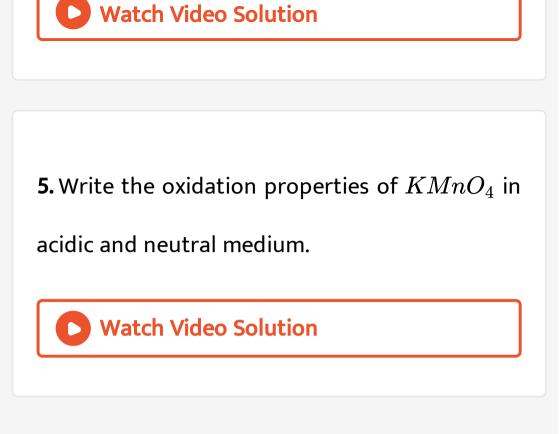
Watch Video Solution

2. Explain the preparation of potassium dichro mate and potassium permanganate. Write their



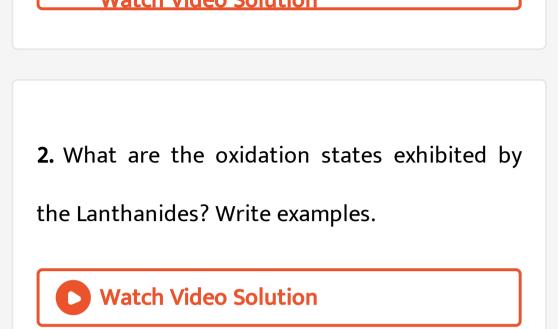
4. Write any four oxidising properties of potassium dichromate.







1. Write the names and outer electronic configurations of 4f - series elements.



Exercise 515

1. What are rare earths and transuranic elements?





1. Give some examples for the ions with pseudo

inert gas electronic configuration.

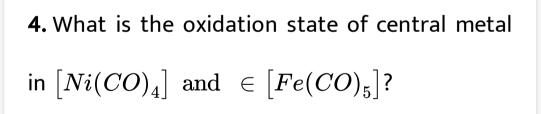
Watch Video Solution

2. Explain the possible oxidation states of

chromium by using electronic configuration.

3. How the maximum and minimum oxidation states of transition elements related to configuration?





5. How heat of atomisation changes in 3d-series

elements are stable?

Watch Video Solution

6. Why copper(I) compounds undergo

disproportionation in aqueous solutions.

7. Transition elements exhibit their highest oxidation states in oxides and fluorides.
Discuss.

Watch Video Solution

8. Among Fe^{2+} and Cr^{2+} , which is stronger

reductant? Why?

9. Ni^{2+} is more stable than Pt^{2+} , but Pt^{4+} is

more stable than Ni^{4+} . Why?

Watch Video Solution

10. Ferrous oxalate is used in developing black

and white photographic film. Discuss.

11. In 3d-series which element has positive

 $E^{\,\circ}_{M^{\,2+}\,/\,M}$ value? Why?

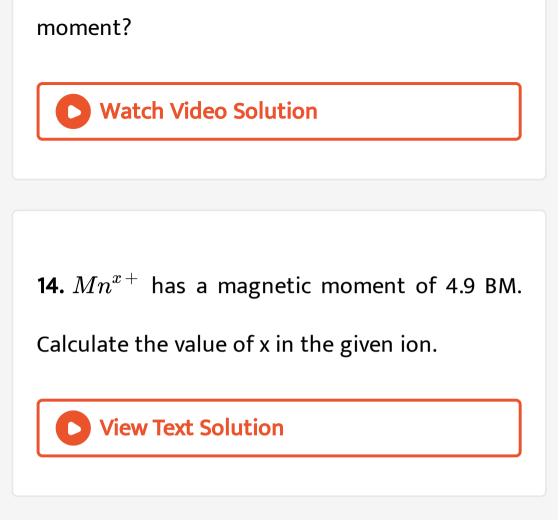
Watch Video Solution

12. Fe^{3+} can oxidise halide ions. Discuss.

Watch Video Solution

13. Why calculated magnetic moment of Co^{2+}

is less than the experimental magnetic



15. A salt of 3d metal gave a white precipitate with NH_4OH , but dissolves in excess NH_4OH . Name the 3d metal.





16. What is the percentage of number of ferro ions in the non-stoichiometric compound $Fe_{0.93}O$.

View Text Solution

17. Addition of appreciable amount $KMnO_4$ in

conc. H_2SO_4 explodes. Explain.

View Text Solution

18. An aqueous solution of $Al_2(SO_4)_3$, $FeSO_4$ and chrome alum is heated with excess Na_2O_2 . A brown residue and an yellow filtrate are obtained. Discuss.

Watch Video Solution

19. E° for Mn^{3+} , Mn^{2+} is more positive than that for Fe^{3+} , Fe^{2+} , Why?

20. Amongest the bivalent ions of 3d-elements,Mn(II) shows maximum paramagnetic character,Substantiate.

21. Copper is regarded as transition metal, though it has completely filled 3d-orbitals. Explain.

Watch Video Solution

22. Compounds of iron are coloured and paramagnetic. Explain.

23. In 3d-series which element cannot displace

hydrogen gas from dilute acids? Why?

24. Mn^{3+} is less stable than Mn^{2+} and Mn^{4+} ions. Why?

25. Acidified dichromate solution turns green

when sodium sulphide is added to it. Explain.

26. How lanthanides differ from actinides in their oxidation states?
Watch Video Solution

27. Is any actinide has no electrons in 5f-subshell? If so name it.

Watch Video Solution

28. What is actinoid contraction ?



29. Only chelate complexes of lanthanides are

known, other complexes are less stable.

Substainliate.

Watch Video Solution

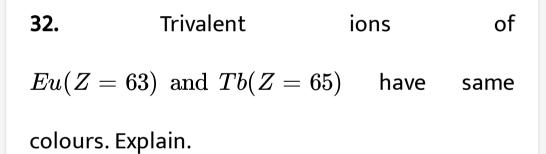
30. Basic nature of $Lu(OH)_2$ is less than that

of $La(OH)_3$. Why?

31. Which lanthanide is synthetic? Write its

electronic configuration.





33. Eu^{2+} is good reductant, but Ce^{4+} is good

oxidant. Explain.