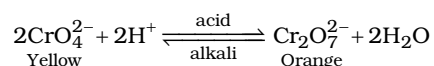


32.(D) Actual composition of chromite ore (FeCr_2O_4) is $\text{FeO} \cdot \text{Cr}_2\text{O}_3$. In FeO , the oxidation state of Fe is +2 while in Cr_2O_3 , the oxidation state of Cr is +3.

33.(C) Yellow colour of the potassium chromate changes to orange on acidification. It is due to the formation of dichromate ions.



34.(A) In basic medium, the following reaction takes place $2\text{KMnO}_4 + 2\text{KOH} \longrightarrow 2\text{K}_2\text{MnO}_4 + \text{H}_2\text{O} + [\text{O}]$.

Due to the presence of nascent oxygen $[\text{O}]$, KMnO_4 (in basic medium) behaves like a strong oxidizing agent.

35.(C) Potassium dichromate, on heating gives oxygen and chromic oxide (Cr_2O_3).



36.(D) $2\text{MnO}_2 + 4\text{KOH} + \text{O}_2 \xrightarrow{\text{Fusion}} 2\text{K}_2\text{MnO}_4 + 2\text{H}_2\text{O}$

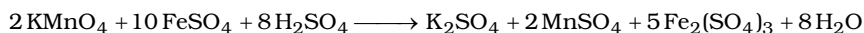
Oxidation number of Mn in K_2MnO_4 is $2 \times (1) + x + 4(-2) = 0$

$$x = +6$$

37.(C) $2\text{MnO}_4^- + \text{Br}^- + \text{H}_2\text{O} \longrightarrow 2\text{MnO}_2 + \text{BrO}_3^- + 2\text{OH}^-$

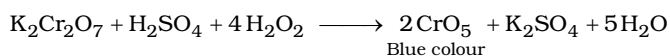
38.(C) Aromatic compounds which have $\text{C}=\text{C}$ or $\text{C}\equiv\text{C}$ bond in the side chain decolourise acidic/alkaline KMnO_4 . Benzene does not decolourise the acidic/alkaline KMnO_4 due to the delocalization of π -electrons.

While propene decolourized the alkaline KMnO_4 due to the presence of $\text{C}=\text{C}$ bond. Ferrous ammonium sulphate and oxalic acid decolourize the KMnO_4 in acidic medium.



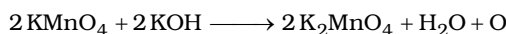
39.(C) Potassium permanganate is a powerful oxidizing agent in neutral, alkaline or acidic solution because it liberates nascent oxygen. The aqueous solution of KMnO_4 can be decolourized by $\text{C}_2\text{O}_4^{2-}$, HSO_3^- and CO_3^{2-} cannot decolourise KMnO_4 aqueous solution.

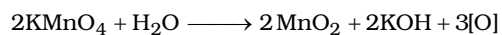
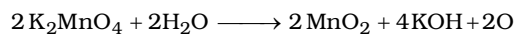
40.(C) Acidified potassium dichromate is oxidised to unstable blue chromium peroxide, which is soluble in ether and produces blue coloured solution.



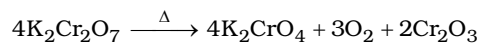
41.(D) In acidic medium, $\text{KMnO}_4 \xrightarrow{+7} \text{Mn}^{+2}\text{SO}_4$ In weak basic medium $\text{KMnO}_4 \longrightarrow \text{MnO}_2$

42.(B) In basic medium potassium permanganate is reduced to first manganate and then to manganese dioxide (colourless).

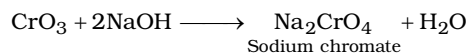




43.(C) Potassium dichromate (orange coloured) on heating gives oxygen and chromic oxide (CrO_3). Chromic oxide is green coloured and this reaction is redox reaction.



44.(A) CrO_3 dissolves in aqueous NaOH to give sodium chromate.



45.(C) Ammonium dichromate on heating gives green coloured powder of Cr_2O_3 .

