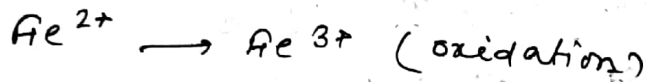
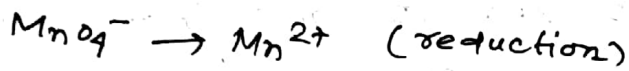


⊛ Balance the redox rxn by ion-electron method:-

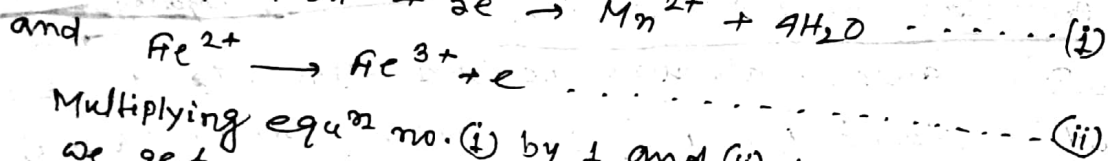
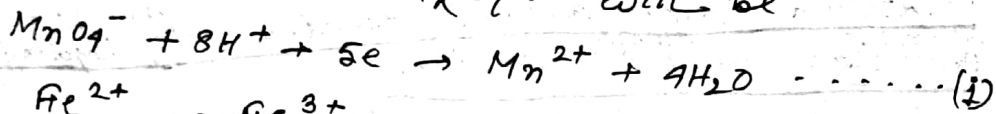
Question: (a) state what happens when potassium permanganate is treated with ferrous sulphate in acid medium.

Ans: (a) In aqueous acid medium potassium permanganate ( $KMnO_4$ ) oxidises  $FeSO_4$  to  $Fe_2(SO_4)_3$  and itself reduces to  $Mn^{2+}$  salt. Hence the molecular unbalanced eqn can be written as  
 $KMnO_4 + FeSO_4 \rightarrow MnSO_4 + Fe_2(SO_4)_3 + K_2SO_4$   
 (In  $H_2SO_4$  medium).

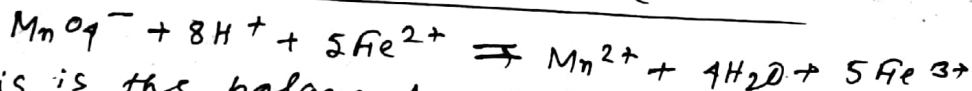
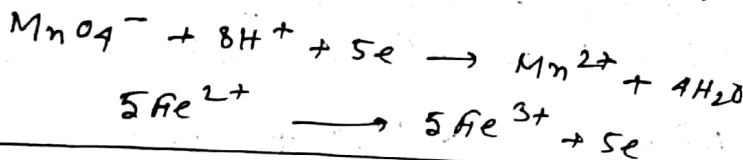
(b) The ionic form of this molecular eqn can be written as  
 $MnO_4^- + Fe^{2+} \rightarrow Mn^{2+} + Fe^{3+}$   
 This ionic eqn can be broken into oxidation and reduction half rxns as -



(c) Hence the balanced <sup>partial</sup> eqn will be



Multiplying eqn no. (i) by 1 and (ii) by 5 and adding them we get,

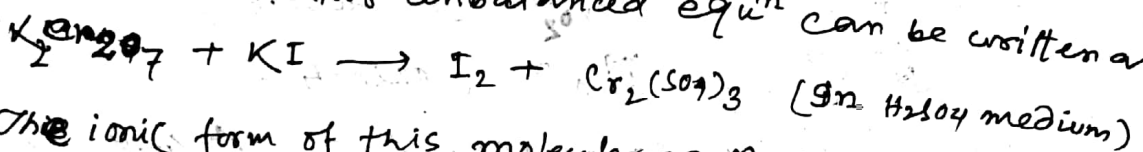


This is the balanced eqn in ionic form.

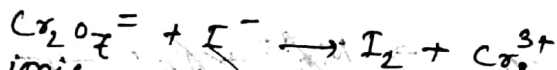
or,  $2KMnO_4 + 8H_2SO_4 + 10FeSO_4 = 2MnSO_4 + 8H_2O + 5Fe_2(SO_4)_3 + K_2SO_4$  (in mol. form)  
 (b) potassium dichromate is treated with potassium iodide in dilute acid medium.

Ans: (a) In aqueous acid medium  $K_2Cr_2O_7$  oxidises  $KI$  to  $I_2$  and itself reduces to  $Cr^{3+}$  salt.

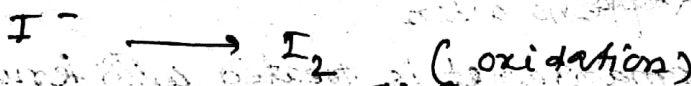
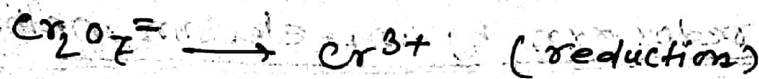
Hence the molecular unbalanced eqn can be written as



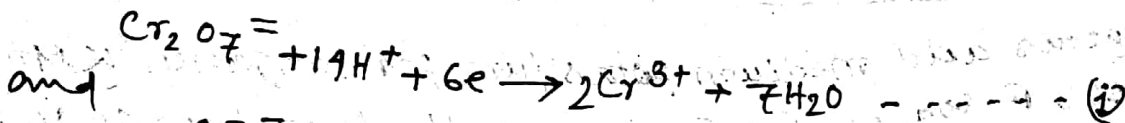
(b) The ionic form of this molecular eqn can be written as



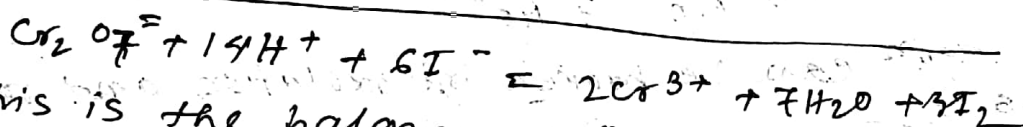
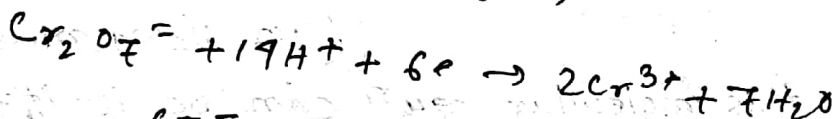
This ionic eqn can be broken into oxidation and reduction half-rxns as -



∴ Hence the balanced <sup>partial</sup> eqn<sup>n</sup> will be

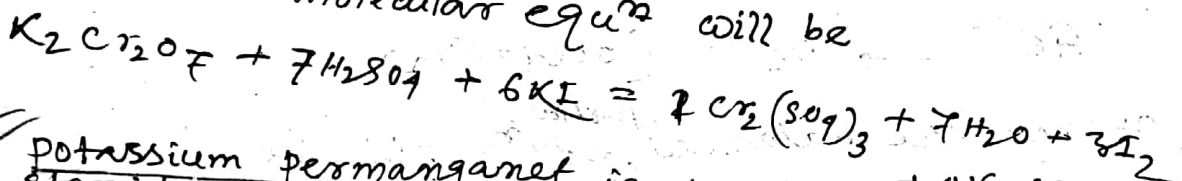


Multiplying eqn<sup>n</sup> no. (i) by 1 and eqn<sup>n</sup> no. (ii) by 3 and adding them, we get,



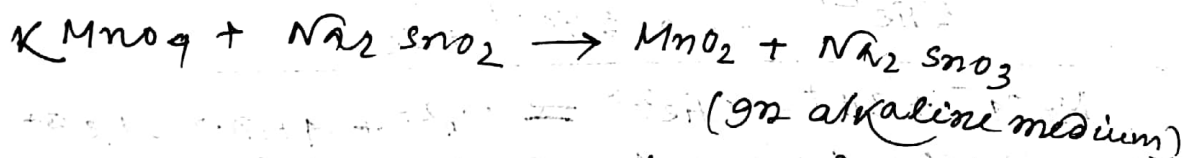
This is the balance eqn<sup>n</sup> in ionic form.

(d) The balance molecular eqn<sup>n</sup> will be



Q. 3) ~~potassium permanganate is treated with hydrogen~~  
~~stannite in acidic medium~~ <sup>alkaline</sup> ~~medium~~ <sup>sodium</sup> ~~stannate~~

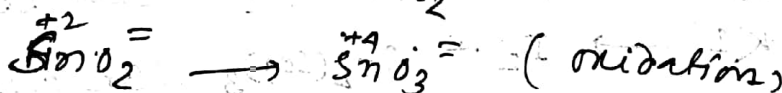
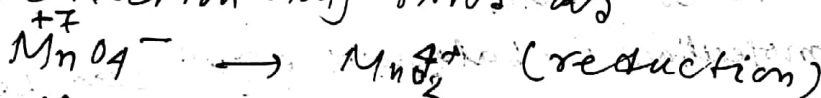
Ans. (a) In aqueous alkaline medium  $\text{KMnO}_4$  oxidises sodium stannite ( $\text{Na}_2\text{SnO}_2$ ) to sodium stannate ( $\text{Na}_2\text{SnO}_3$ ) and itself reduces to  $\text{Mn}^{2+}$  salt. Hence the molecular unbalance eqn<sup>n</sup> can be written as



(b) The ionic form of the molecular eqn<sup>n</sup> can be written as

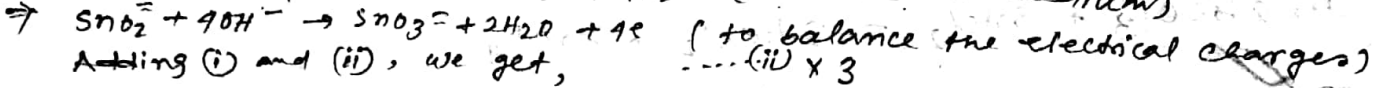
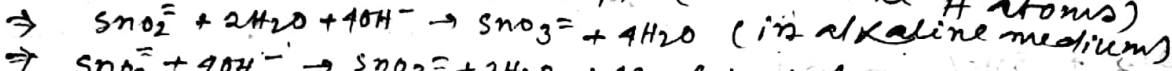
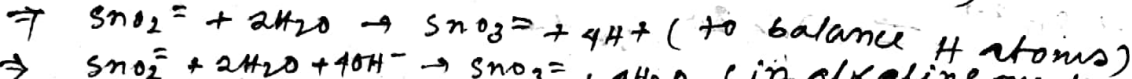
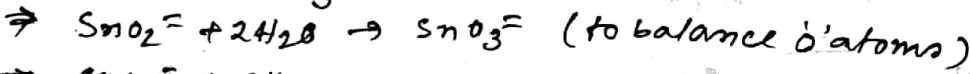
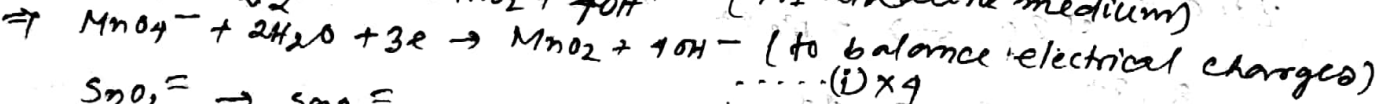
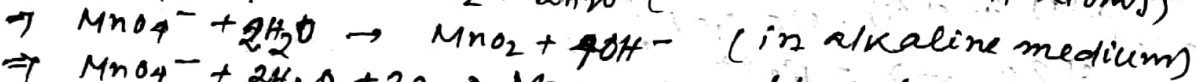
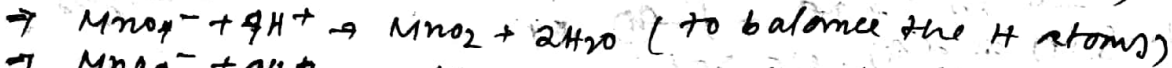
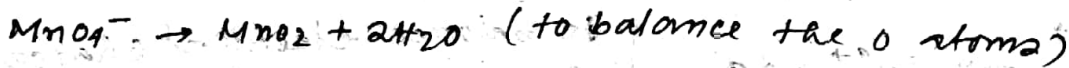


The ionic eqn<sup>n</sup> can be broken into oxidation and reduction half rxns as

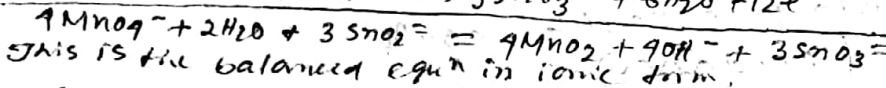
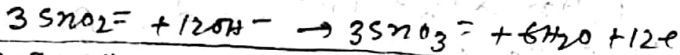




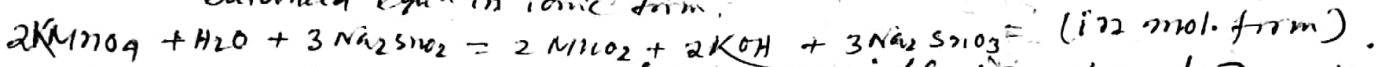
(c) Hence the balanced partial eqn is



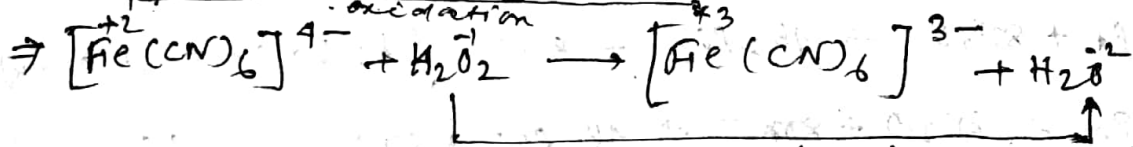
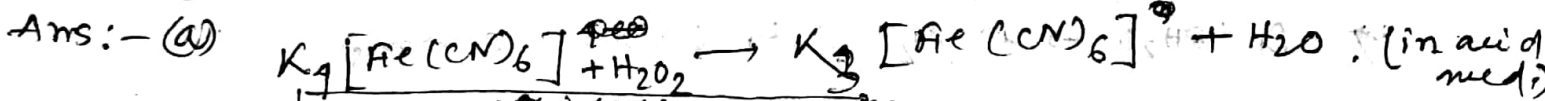
Adding (i) and (ii), we get,



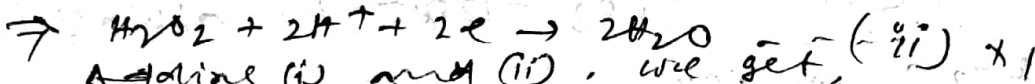
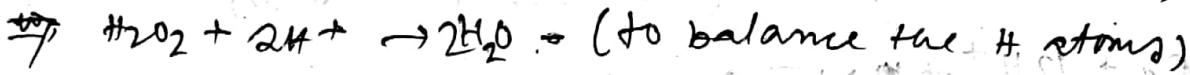
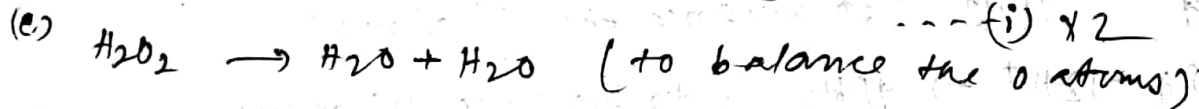
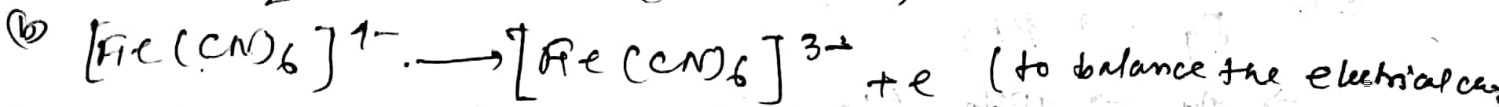
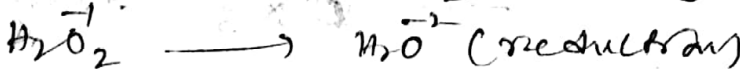
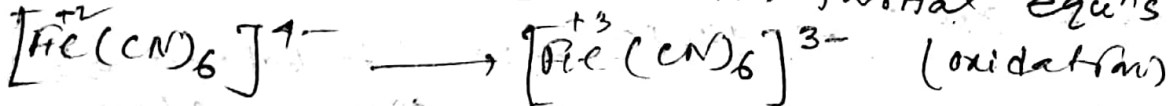
This is the balanced eqn in ionic form.



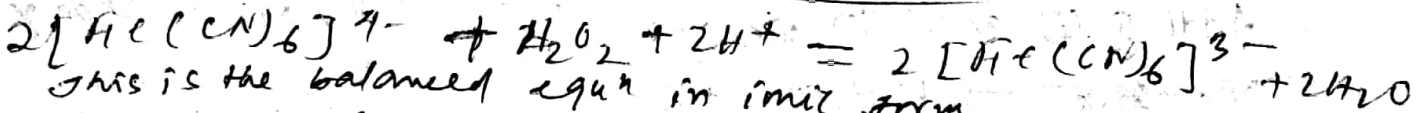
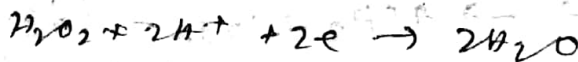
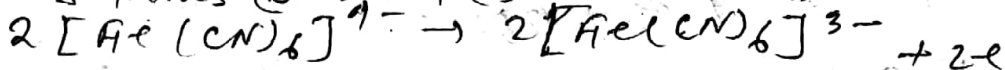
Q: Potassium ferricyanide ferrocyanide is treated with hydrogen peroxide in acid medium.



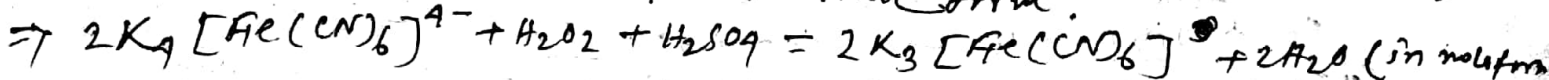
The above eqn can be broken into two partial eqns



Adding (i) and (ii), we get,



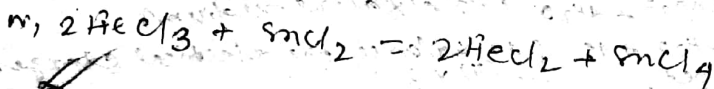
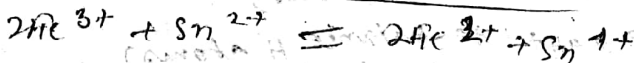
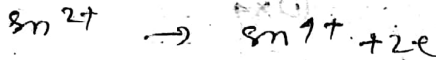
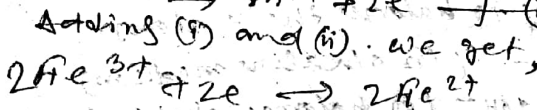
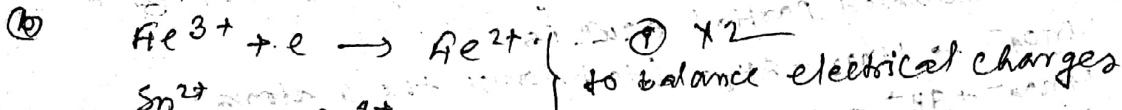
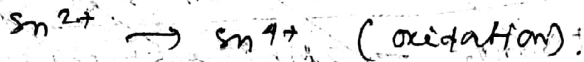
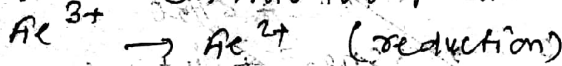
This is the balanced eqn in ionic form.



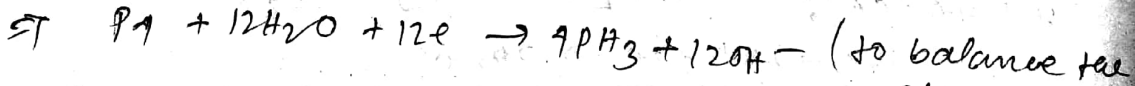
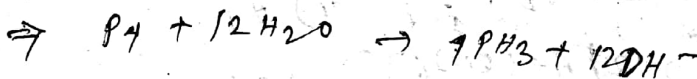
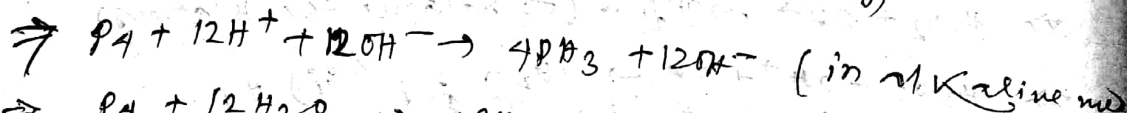
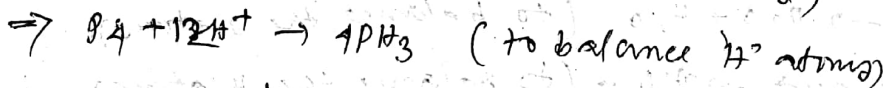
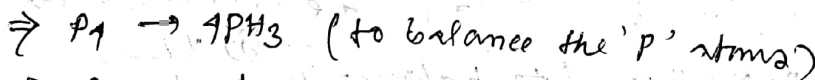
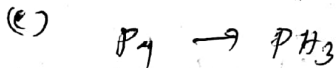
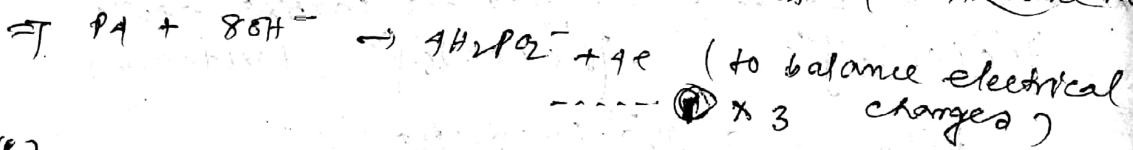
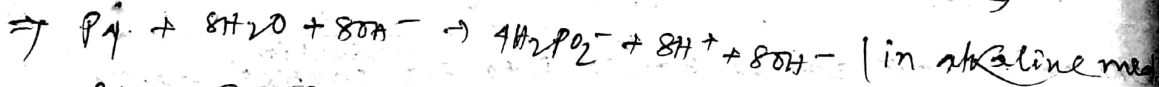
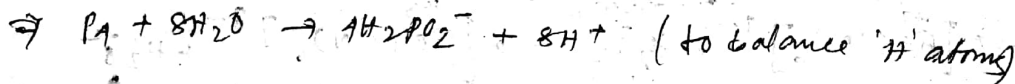
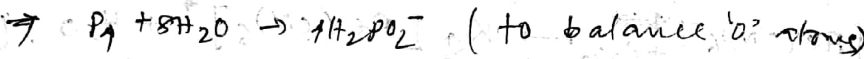
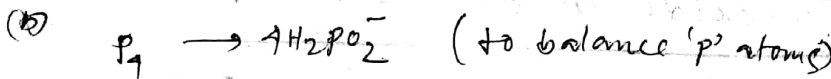
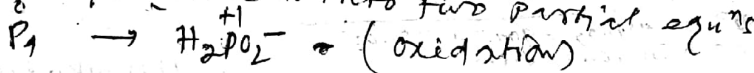
Balance the redox rxn by ion electron method

Questions

Q1)  $FeCl_3 + SnCl_2 \rightarrow FeCl_2 + SnCl_4$   
 The above equation is broken into two partial eqns.



Q2)  $P_4 \rightarrow H_2PO_2^- + PH_3$  (in alkaline medium)  
 The above equation is broken into two partial eqns.



Adding (i) and (ii) we get,

