Academic Resource Centre

1/3, Near SAP Theatre, Tirupur - 641603

REDOX REACTION

Class 11 - Chemistry

Section A

1. Calculate the oxidation number of phosphorus in the following species: **[2]**

   a. HPO_3^{2-}
   b. PO_4^{3-}

Section B

2. Calculate the oxidation number of sulphur, chromium and nitrogen in H_2SO_5, $Cr_2O_7^{2-}$ and NO_3^-. Suggest the structure of these compounds. Count for the fallacy. **[3]**
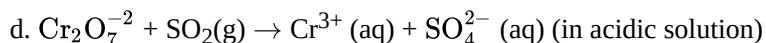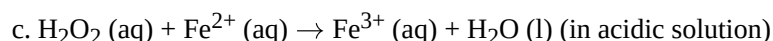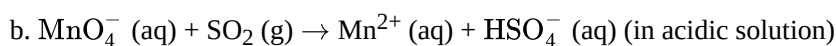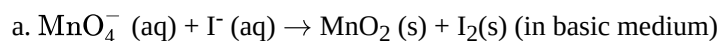
Section C

3. Calculate the oxidation number of the underlined element in **[5]**

   i. $\underline{V}O_2^+$
   ii. $\underline{U}O_2^{2+}$
   iii. $Ba\underline{Xe}6_6$
   iv. $K_4\underline{P}_2O_7$
   v. $K_2\underline{S}$
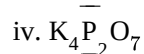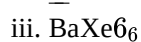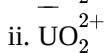
4. Find the oxidation state of sulphur in the following compounds: H_2S, H_2SO_4, $S_2O_4{}^{2-}$, $S_2O_8{}^{2-}$ and $HSO_3{}^-$. **[5]**

5. Balance the following redox reactions by ion – electron method : **[5]**

   a. MnO_4^- (aq) + I⁻ (aq) $\rightarrow$ MnO_2 (s) + I_2(s) (in basic medium)

   b. MnO_4^- (aq) + SO_2 (g) $\rightarrow$ Mn^{2+} (aq) + HSO_4^- (aq) (in acidic solution)

   c. H_2O_2 (aq) + Fe^{2+} (aq) $\rightarrow$ Fe^{3+} (aq) + H_2O (l) (in acidic solution)

   d. $Cr_2O_7^{-2}$ + SO_2(g) $\rightarrow$ Cr^{3+} (aq) + SO_4^{2-} (aq) (in acidic solution)

6. Balance the ionic equation: $Cr_2O_7^{2-}$ + Fe^{2+} + H^+ $\rightarrow$ Cr^{3+} + Fe^{3+} + H_2O. **[5]**