

Which of the following represents a redox reaction ?

- (A) $\text{NaOH} + \text{HCl} \longrightarrow \text{NaCl} + \text{H}_2\text{O}$ (B) $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \longrightarrow \text{BaSO}_4 + 2\text{HCl}$
- (C) $\text{CuSO}_4 + 2\text{H}_2\text{O} \longrightarrow \text{Cu}(\text{OH})_2 + \text{H}_2\text{SO}_4$ (D) $\text{Zn} + 2\text{HCl} \longrightarrow \text{ZnCl}_2 + \text{H}_2$

The oxidation state of A, B and C in a compound are +2, +5 and -2, respectively. The compound is

- (A) $A_2(BC)_2$ (B) $A_2(BC)_3$ (C) $A_3(BC_4)_2$ (D) $A_2(BC_4)_3$

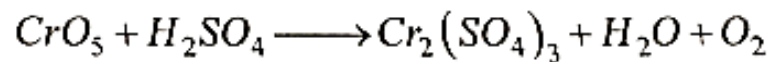
When KMnO_4 acts as an oxidising agent and ultimately from MnO_4^{2-} , MnO_2 , Mn_2O_3 , and Mn^{2+} , then the numbers of electrons transferred in each case, respectively, are

- (A) 4, 3, 1, 5 (B) 1, 5, 3, 7 (C) 1, 3, 4, 5 (D) 3, 5, 7, 1

For the redox reaction $\text{Cr}_2\text{O}_7^{2-} + \text{I}^- + \text{H}^+ \longrightarrow \text{Cr}^{3+} + \text{I}_2 + \text{H}_2\text{O}$ the correct coefficients of the reactants for the balanced equation are

	$\text{Cr}_2\text{O}_7^{2-}$	I^-	H^+
(A)	1	3	14
(B)	1	6	14
(C)	2	6	14
(D)	1	6	7

How many moles of electron is needed for the reduction of each mole of Cr in the reaction,



(A) 4

(B) 3

(C) 5

(D) 7

Values of p, q, r, s and t are in the following redox reaction :



- | | p | q | r | s | t |
|-----|---|---|---|---|---|
| (A) | 3 | 6 | 1 | 5 | 3 |
| (C) | 3 | 6 | 5 | 1 | 3 |

- | | p | q | r | s | t |
|-----|---|---|---|---|---|
| (B) | 3 | 6 | 5 | 3 | 1 |
| (D) | 3 | 5 | 1 | 6 | 3 |

' $Cr_2O_7^{2-} + 2I^- + 14H^+ \longrightarrow I_2 + 2Cr^{3+} + 7H_2O$ which are not in balanced position ?

(A) H^+ and H_2O (B) $Cr_2O_7^{2-}$ and Cr^{3+} (C) I^- and I_2 (D) All are balanced

1 mol of ferric oxalate is oxidized by x mol of MnO_4^- and also 1 mol of ferrous oxalate is oxidized by y mol of MnO_4^- in acidic medium. The ratio (y/x) is:

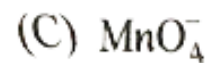
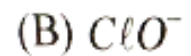
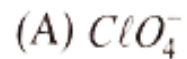
(A) 2 : 3

(B) 1 : 2

(C) 3 : 1

(D) 1 : 3

Which of the following species can function both as oxidising as well as reducing agent ?



1 mol of FeC_2O_4 is oxidised by x mol of $Cr_2O_7^{2-}$ in acidic medium x is:

(A) 3

(B) 1.5

(C) 0.5

(D) 1.0

In the reaction between FeSO_4 , KMnO_4 and H_2SO_4 can be represented as follows :



Then on the basis of above equation answer the following :

In the above equation the substance that acts as an oxidising agent is

(A) KMnO_4

(B) H_2SO_4

(C) Both KMnO_4 and H_2SO_4

(D) FeSO_4

In a balanced equation the coefficients of KMnO_4 and H_2SO_4 will be respectively

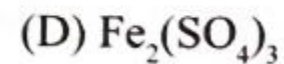
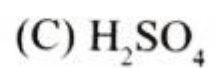
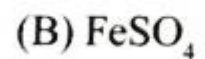
(A) 2, 8

(B) 8, 2

(C) 10, 8

(D) 8, 10

Which of the following acts as a reducing agent



The n -factor of FeS_2 during its oxidation as :



(a) 10

(b) 11

(c) 2

(d) 8

1. The equivalent mass of HCl in the given redox change is :



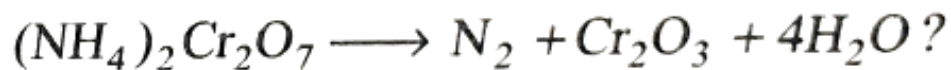
(a) 85.1

(b) 36.5

(c) 73.0

(d) None of these

What is equivalent mass of $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ in the change



(a) $\frac{M}{2}$

(b) $\frac{M}{3}$

(c) $\frac{M}{4}$

(d) $\frac{M}{6}$

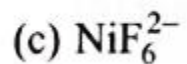
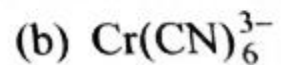
For the redox reaction,



The correct coefficients of the reactants for the balanced reaction are:

	MnO_4^-	$\text{C}_2\text{O}_4^{2-}$	H^+
(a)	2	5	16
(b)	16	5	2
(c)	5	16	2
(d)	2	16	5

Among the following, identify the species with an atom in +6 oxidation state:



The oxidation number of S in $\text{Na}_2\text{S}_4\text{O}_6$ is:

- (a) +2.5
- (b) +2 and +3 (two S have +2 and other two have +3)
- (c) +2 and +3 (three S have +2 and one S has +3)
- (d) +5 and 0 (two S have +5 and the other two S have 0)

. The number of mole of KMnO_4 that will be needed to react completely with one mole of ferrous oxalate in acidic solution is :

(a) $3/5$

(b) $2/5$

(c) $4/5$

(d) 1

An element A in a compound ABD has oxidation number A^{n-} . It is oxidised by $Cr_2O_7^{2-}$ in acidic medium. In the experiment 1.68×10^{-3} mole of $K_2Cr_2O_7$ were used for 3.26×10^{-3} mole of ABD. The new oxidation number of A after oxidation is :

- (a) 3 (b) $3 - n$ (c) $n - 3$ (d) $+n$

PROBLEM 9 0.5 g sample containing MnO_2 is treated with HCl , liberating Cl_2 . The Cl_2 is passed into a solution of KI and 30.0 cm^3 of $0.1M\ Na_2S_2O_3$ are required to titrate the liberated iodine. Calculate the percentage of MnO_2 in sample. (At. wt. of $Mn = 55$)

PROBLEM 69 A 10 g mixture of Cu_2S and CuS was treated with 200 mL of 0.75M MnO_4^- in acid solution producing SO_2 , Cu^{2+} and Mn^{2+} . The SO_2 was boiled off and the excess of MnO_4^- was titrated with 175 mL of 1M Fe^{2+} solution. Calculate % of CuS in original mixture.

