YAKEEN NEET 2.0

2026

Redox Reaction

MPQ Solution - 02 | **Physical Chemistry**

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QUESTION – (26th June 2nd Shift 2022)

Which one of the following is an example of disproportionation reaction?

(A) $3MnO_4^{2-} + 4H^+ \rightarrow 2MnO_4^- + MnO_2 + 2H_2O$

(B) $MnO_4^- + 4H^+ 4e^- \rightarrow MnO_2 + 2H_2O$

(C) $10I^- + 2MnO_4^- + 16H^+ \rightarrow 2Mn^{2+} + 8H_2O + 5I_2$

(D) $8MnO_4^- + 3S_2O_3^{2-} + H_2O \rightarrow 8MnO_2 + 6SO_4^{2-} + 2OH^-$

QUESTION – (26th July 1st Shift 2022)

Which of the given reactions is not an example of disproportionation reaction?

A $2H_2\overset{-1}{O}_2 \rightarrow 2H_2\overset{-2}{O} + \overset{0}{O_2}$

B $2\overset{+4}{N}O_2 + H_2O \rightarrow \overset{+5}{H}NO_3$

C $\overset{+7}{Mn}O_4^- + 4H^+ + 3e^- \rightarrow \overset{+4}{Mn}O_2 + 2H_2O$

D $3\overset{+6}{Mn}O_4^{2-} + 4H^+ \rightarrow 2\overset{+7}{Mn}O_4^- + \overset{+4}{Mn}O_2 + 2H_2O$

QUESTION – (2002)

Which of the following is a redox reaction?

A $NaCl + KNO_3 \rightarrow NaNO_3 + KCl$

B $CaC_2O_4 + 2HCl \rightarrow CaCl_2 + H_2C_2O_4$

C $Mg(OH)_2 + 2NH_4Cl \rightarrow MgCl_2 + 2NH_4OH$

D $Zn + 2AgCN \rightarrow 2Ag + Zn(CN)_2$

QUESTION – (NCERT: PL-239 | NV, JEE Main Jan. 27, 2024 (II)

1 mole of PbS is oxidized by "X" moles of O_3 to give "Y" moles of O_2. X + Y =

$$2\overset{-2}{PbS} + 8O_3 \rightarrow 2\overset{+6}{PbSO_4} + 8O_2$$

$n_f = 8$ $\quad$ $n_f = 2$

$4 + 4 = 8$

$$1PbS + 4O_3 \rightarrow 1PbSO_4 + 4O_2$$

$X = 4$ $\quad$ $Y = 4$

QUESTION – (NCERT: PL-242, 243 | JEE Main April 6, 2024 (II))

Match List-I with List-II

	List-I (Reaction)		List-II (Type of Redox reaction)
A.	$N_2(g) + O_2(g) \rightarrow 2NO(g)$	(I)	Decomposition
B.	$2Pb(NO_3)_2(s) \rightarrow 2PbO(s) + 4NO_2(g) + O_2(g)$	(II)	Displacement
C.	$2Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq.) + H_2(g)$	(III)	Disproportionation
D.	$2NO_2(g) + 2OH^-(aq.) \rightarrow NO_2^-(aq.) + NO_3^-(aq.) + H_2O(l)$	(IV)	combination

A → IV
B – I
C – II
D – III

Choose the correct answer from the options give below:

A (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

B (A)-(III), (B)-(II), (C)-(I), (D)-(IV)

C (A)-(II), (B)-(III), (C)-(IV), (D)-(I)

D (A)-(IV), (B)-(I), (C)-(II), (D)-(III)

QUESTION – (NCERT: PL-239 | NV, JEE Main Sep. 02, 2020 (I)

The oxidation states of iron atom in compound (A), (B) and (C), respectively, are *x*, *y* and *z*. The sum of *x*, *y* and z is

$Na_4[Fe(CN)_5(NOS)]$ (A)

$4 + x - 5 - 1 = 0$

$x - 2 = 0$

$x = 2$

$Na_4[FeO_4]$ (B)

$4 + y - 8 = 0$

$y = +4$

$[Fe_2(CO)_9]$ (C)

$2z + 9 \times 0 = 0$

$2z = 0$

$z = 0$

$x + y + z$

$2 + 4 + 0 = 6$

QUESTION – (NCERT: PL-239 | NV, JEE Main Jan. 27, 2024 (I)

From the given list, the number of compounds with +4 oxidation state of Sulphur

$\overset{+6}{S}O_3$, $H_2\overset{+4}{S}O_3$, $\overset{+4}{S}OCl_2$, $\overset{+4}{S}F_4$, $Ba\overset{+6}{S}O_4$, $H_2\overset{+6}{S}_2O_7$

Ans 3

QUESTION – (NCERT: PL-239 | NV, JEE Main Sep. 02, 2020 (II)

The oxidation states of transition metal atoms in $K_2Cr_2O_7$, $KMnO_4$ and K_2FeO_4, respectively, are x, y and z. The Sum of x, y and z is __19__.

$1+y-8=0$

$y=+7$

$2+2x-14=0$

$2x=12$

$x=+6$

$2+z-8=0$

$z=+6$

$x+y+z$

$6+7+6=19$

QUESTION – (NCERT: PL-239, | JEE Main Jan. 07, 2020 (I))

Oxidation number of potassium in K_2O, K_2O_2 and KO_2, respectively, is :

A. +2, +1 and +1/2

B. +1, +1 and +1

C. +1, +4 and +2

D. +1, +2 and +4

QUESTION – (NCERT: PL-239, | JEE Main Jan. 07, 2020 (I))

The oxidation state of Cr in $[Cr(H_2O)_6]Cl_3$, $[Cr(C_6H_6)_2]$ & $K_2[Cr(CN)_2(O)_2(O_2)(NH_3)]$ respectively are :

(A) +3, +4 and +6

(B) +3, +2 and +4

(C) +3, 0 and +6

(D) +3, 0 and +4

O_2^- O_2^{2-}

+3

$x + 6(0) - 3 = 0$

$x = +3$

0

$x + 2(0) = 0$

$x = 0$

+6

$x + x - 2 - 4 - 2 + 0 = 0$

$x = +6$

QUESTION – (NCERT: PL-239, | JEE Main Online April 19, 2014)

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

(A) ✗ $[MnO_4]^-$

$x - 8 = -1 \Rightarrow x = +7$

(B) ✗ $[Cr(CN)_6]^{3-}$

$x - 6 = -3 \Rightarrow x = +3$

(C) ✗ Cr_2O_3

$2x - 6 = 0 \Rightarrow x = +3$

(D) ✓ CrO_2Cl_2

$x - 4 - 2 = 0$

$x = +6$

THANK YOU