YAKEEN NEET 2.0

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Redox Reaction

MPQ Solution - 04 | **Physical Chemistry**

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Magarmach Practice Questions (MPQ)

SINGLE CHOICE QUESTIONS

QUESTION – (NCERT Exemplar)

Which of the following is not an example of redox reaction?

(A) $CuO + H_2 \longrightarrow Cu + H_2O$

(B) $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$

(C) $2K + F_2 \longrightarrow 2KF$

(D) $BaCl_2 + H_2SO_4 \rightarrow BaSO_4 + 2HCl$

QUESTION – (NCERT Exemplar)

The oxidation number of an element in a compound is evaluated on the basis of certain rules. Which of the following rules is not correct in this respect?

(A) The oxidation number of hydrogen is always +1.

(B) The algebraic sum of all the oxidation numbers in a compound is zero.

(C) An element in the free or the uncombined state bears oxidation number zero.

(D) In all its compounds, the oxidation number of fluorine is – 1.

QUESTION – (NCERT Exemplar)

Thiosulphate reacts differently with iodine and bromine in the reactions given below:

$$2S_2O_3^{2-} + I_2 \longrightarrow S_4O_6^{2-} + 2I^-$$

$$S_2O_3^{2-} + 2Br_2 + 5H_2O \longrightarrow 2SO_4^{2-} + 2Br^- + 10H^+$$

Which of the following statements justifies the above dual behavior of thiosulphate?

(A) Bromine is a stronger oxidant than iodine.

(B) Bromine is a weaker oxidant than iodine.

(C) Thiosulphate undergoes oxidation by bromine and reduction by iodine in these reactions.

(D) Bromine undergoes oxidation and iodine undergoes reduction in these reactions.

QUESTION – (NCERT Exemplar)

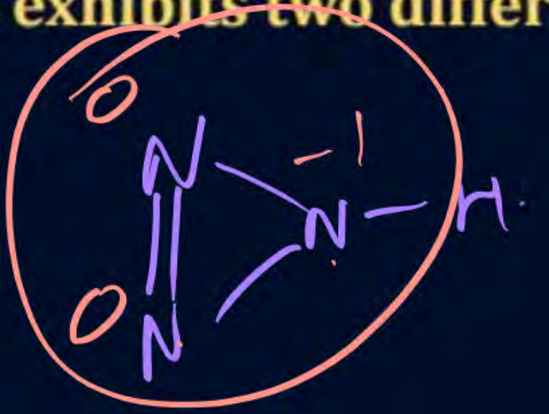
In which of the following compounds, an element exhibits two different oxidation states.

(A) NH_2OH

(B) NH_4NO_3

(C) N_2H_4

(D) N_3H



NH_4^+

$x + 4 = +1$

$x = -3$

NO_3^-

$x - 6 = -1$

$x = 6 - 1 = 5$

QUESTION – (NCERT Exemplar)

Which of the following arrangements represent increasing oxidation number of the central atom?

CrO_2^-

$x - 4 = -1$

$x = 4 - 1 = +3$

(A) +3 +5 +6 +7 $CrO_2^-, ClO_3^-, CrO_4^{2-}, MnO_4^-$

(B) $ClO_3^-, CrO_4^{2-}, MnO_4^-, CrO_2^-$

(C) $CrO_2^-, ClO_3^-, MnO_4^-, CrO_4^{2-}$

(D) $CrO_4^{2-}, MnO_4^-, CrO_2^-, ClO_3^-$

QUESTION – (NCERT Exemplar)

The largest oxidation number exhibited by an element depends on its outer electronic configuration. With which of the following outer electronic configurations the element will exhibit largest oxidation number?

(A) $3d^1\ 4s^2$

(B) $3d^3\ 4s^2$

(C) $3d^5\ 4s^1$

(D) $3d^5\ 4s^2$

no. of $s\ e^-$ + no. of d unpaired e^- = largest oxid. no.

$n\,s$ + $(n-1)\,d\ e^-$

A: 3

B: 5

C: 6

D: 7

QUESTION – (NCERT Exemplar)

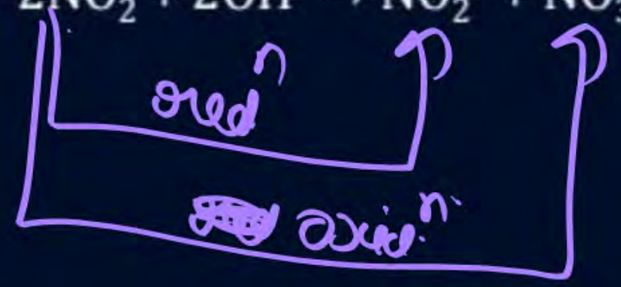
Identify disproportionation reaction

A $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

B $CH_4 + 4Cl_2 \rightarrow CCl_4 + 4HCl$

C $2F_2 + 2OH^- \rightarrow 2F^- + OF_2 + H_2O$

D $2NO_2 + 2OH^- \rightarrow NO_2^- + NO_3^- + H_2O$



QUESTION – (NCERT Exemplar)

Which of the following elements does not show disproportionation tendency?

A Cl

B Br

C F

D I

MULTIPLE CHOICE QUESTIONS

QUESTION* – (NCERT Exemplar)

Which of the following statement(s) is/are not true about the following decomposition reaction.

$$\overset{+1\ +5\ -2}{2KClO_3} \longrightarrow \overset{+1\ -1}{2KCl} + \overset{0}{3O_2}$$

A. Potassium is undergoing oxidation.

B. Chlorine is undergoing oxidation.

C. Oxygen is reduced.

D. None of the species are undergoing oxidation or reduction

QUESTION* – (NCERT Exemplar)

Identify the correct statement (s) in relation to the following reaction:

$$Zn + 2HCl \longrightarrow ZnCl_2 + H_2$$

Reductant Oxidant

A ✗ Zinc is acting as an oxidant.

B ✗ Chlorine is acting as a reductant.

C ✓ Hydrogen ion is acting as an oxidant.

D ✓ Zinc is acting as a reductant.

QUESTION* – (NCERT Exemplar)

The exhibition of various oxidation states by an element is also related to the outer orbital electronic configuration of its atom. Atom(s) having which of the following outermost electronic configurations will exhibit more than one oxidation state in its compounds.

(A) $3s^1$ — no. of oxidn stt. 1

(B) $3d^1 4s^2$ — 2

(C) $3d^2 4s^2$ — 3

(D) $3s^2 3p^3$ — 4

QUESTION* – (NCERT Exemplar)

Identify the correct statements with reference to the given reaction

$$\overset{0}{P_4} + 3\overset{-2\ +1}{OH^-} + 3\overset{+1\ -2}{H_2O} \longrightarrow \overset{-3\ +1}{PH_3} + 3\overset{+1\ +1\ -2}{H_2PO_2^-}$$

A. Phosphorus is undergoing reduction only.

B. Phosphorus is undergoing oxidation only.

C. Phosphorus is undergoing oxidation as well as reduction.

D. Hydrogen is undergoing neither oxidation nor reduction

MATRIX MATCH TYPE QUESTIONS

QUESTION – (NCERT Exemplar)

Match Column I with Column II for the oxidation states of the central atoms.

Column I		Column II	
(i)	$Cr_2O_7^{2-}$	(a)	+ 3
(ii)	MnO_4^-	(b)	+ 4
(iii)	VO_3^-	(c)	+ 5
(iv)	FeF_6^{3-}	(d)	+ 6
		(e)	+ 7

(i) → (d)
(ii) → (e)
(iii) → (c)
(iv) → (a)

FeF_6^{3-}

$x - 6 = -3$

$x = 6 - 3 = +3$

VO_3^-

$x - 6 = -1$

$x = 6 - 1 = +5$

QUESTION – (NCERT Exemplar)

Match the items in Column I with relevant items in Column II.

Column I	Column II
(i) Ions having positive charge	(a) + 7
(ii) The sum of oxidation number of all atoms in a neutral molecule	(b) – 1
(iii) Oxidation number of hydrogen ion (H^+)	(c) + 1
(iv) Oxidation number of fluorine in NaF	(d) 0
(v) Ions having negative charge	(e) Cation
	(f) Anion

ASSERTION AND REASON TYPE

QUESTION – (NCERT Exemplar)

Assertion (A) : Among halogens fluorine is the best oxidant.
Reason (R) : Fluorine is the most electronegative atom.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true but R is not the correct explanation of A.

C. A is true but R is false.

D. Both A and R are false.

QUESTION – (NCERT Exemplar)

$KMnO_4 + KI$

$MnO_4^- + I^- + H^+ \rightarrow I_2 + H_2O + Mn^{2+}$

Assertion (A) : In the reaction between potassium permanganate and potassium iodide, permanganate ions act as Oxidising agent.

Reason (R) : Oxidation state of manganese changes from +2 to +7 during the reaction.

(A) Both A and R are true and R is the correct explanation of A.

(B) Both A and R are true but R is not the correct explanation of A.

(C) A is true but R is false.

(D) Both A and R are false.

QUESTION – (NCERT Exemplar)

$H_2\overset{-1}{O_2} \xrightarrow{\Delta} H_2\overset{-2}{O} + \overset{0}{O_2}$

Assertion (A) : The decomposition of hydrogen peroxide to form water and oxygen is an example of disproportionation reaction.

Reason (R) : The oxygen of peroxide is in –1 oxidation state and it is converted to zero oxidation state in O_2 and –2 oxidation state in H_2O.

(A) Both A and R are true and R is the correct explanation of A.

(B) Both A and R are true but R is not the correct explanation of A.

(C) A is true but R is false.

(D) Both A and R are false.

THANK YOU