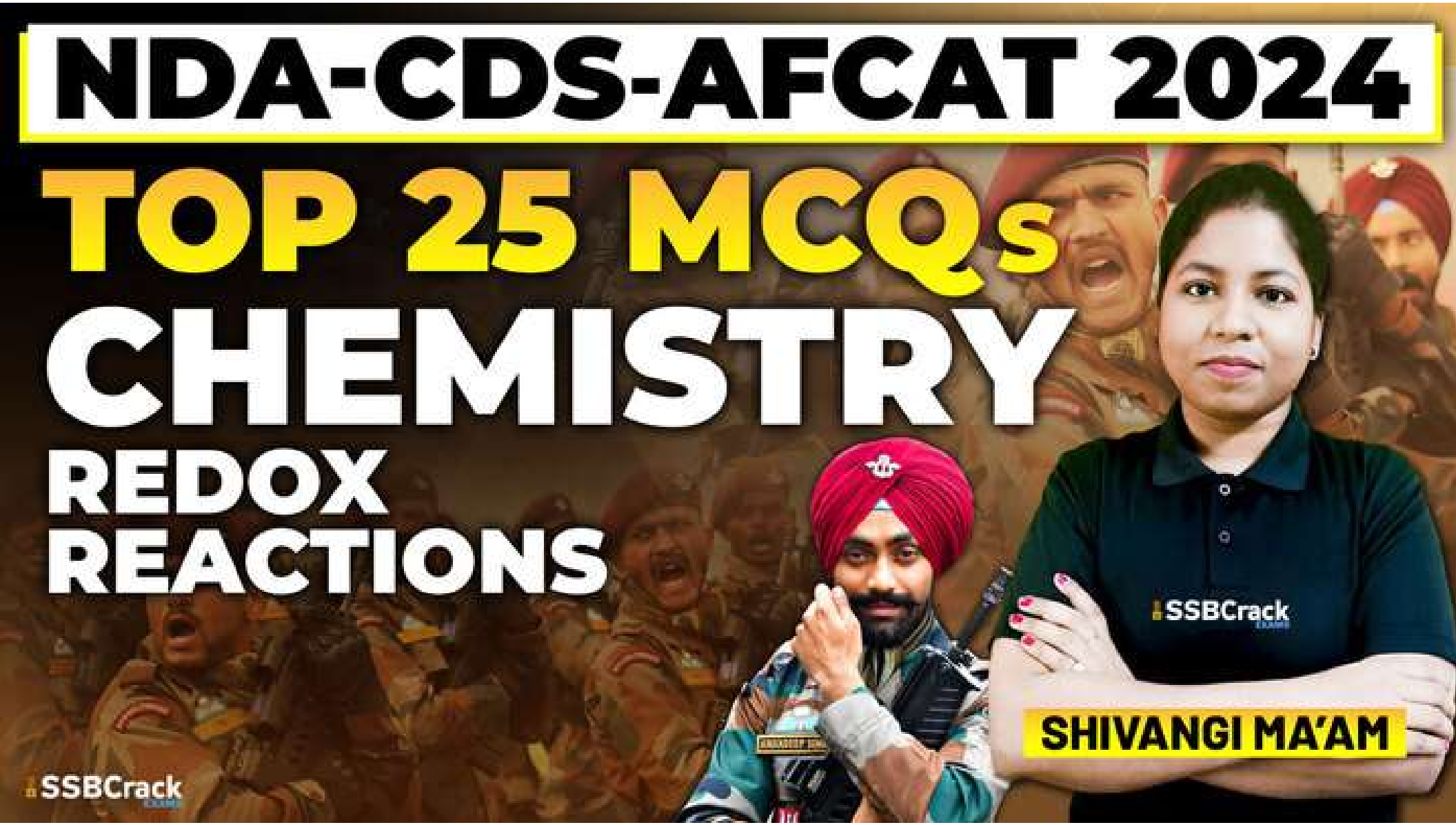
NDA-CDS-AFCAT 2024
TOP 25 MCQs
CHEMISTRY
REDOX REACTIONS
SSBCrack
SHIVANGI MA'AM
SSBCrack

In Which Compound, The Oxidation Number Of Oxygen Is Positive?

a) H_2O_2

b) Na_2O_2

c) OF_2

d) More than one of the above

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a) H_2O_2

b) Na_2O_2

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- The oxidation number of Oxygen in H_2O_2 is -1.
- The oxidation number of Oxygen in NA_2O_2 is -1.
- The oxidation number of Oxygen in H_2O is -2.
- The oxidation number of Oxygen in OF_2 is +2.

Which Of The Following Reactions Is Not Redox?

a) $2KClO_3 \rightarrow 2KCl + 3O_2$

b) $2KBr + Cl_2 \rightarrow 2\ KCl + Br_2$

c) $BaCl_2 + Na_2SO_4 \rightarrow BaSO_4 + 2NaCl$

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- There is no change of oxidation numbers, and thus it is not a redox reaction. It is an example of a Double decomposition reaction.

Which Among The Following Happens In An Oxidation Reaction?

A. Electrons are gained
B. Electrons are lost
C. Protons are gained
D. Protons are lost

a) D

b) A

c) B

d) More than one of the above

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a) D

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- Oxidation simply means a gain of oxygen and an oxidizing agent is a substance that oxidizes something.

In Acidic Medium, One Mole Of Mno4−, Accepts How Many Moles Of Electrons In A Redox Process?

a) 1

b) 3

c) 4

d) 5

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a) 1

b) 3

c) 4

d) 5

- In an acidic medium, one mole of MnO4−, accepts 5 moles of electrons in a redox process.

Which One Of The Following Statements Is NOT Correct For The Given Reaction?

$Fe(S) + CuSO_4(aq) \rightarrow FeSO_4(aq) + Cu(s)$

a) Iron is the reducing agent

b) The solution turns green in colour after the reaction

c) Copper is a more reactive metal than iron

d) The reaction is an example of a redox reaction

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c) Copper is a more reactive metal than iron

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- Iron (Fe) displaces Copper (Cu) by giving up two electrons and gets oxidized and forms a new compound called ferrous sulfate.

Identify The INCORRECT Statement About Rust.

a) Rust and iron have the same composition.

b) Rust is not iron.

c) Rusting is a chemical change.

d) Rusting is a kind of oxidation.

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- A reddish-brown deposit called rust, forms over a piece of iron when it is exposed to moist air for some time. Rust is hydrated iron (III) oxide ($Fe_2O_3.xH_2O$).

Which Of The Following Statements Is Correct Regarding The Oxidation Number Of Oxygen?

I. The oxidation number of Oxygen in most compounds is -2.

II. When Oxygen is bonded to Fluorine in compounds like Oxygen difluoride and Dioxygen difluoride, the Oxygen is assigned an oxidation number of +2 and +2 respectively.

III. In peroxide, an Oxygen atom is assigned an oxidation number of -1 and in Superoxide, each oxygen atom is assigned an oxidation number of -1/2.

a) I only

b) II only

c) I and III only

d) I, II, and III

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Explanation

- When Oxygen is bonded to Fluorine in compounds like Oxygen difluoride(OF2) and dioxygen difluoride(O2F2), the oxygen is assigned an oxidation number of +2 and +1 respectively.
- The **oxidation number of Oxygen** in most compounds is **-2.**
- In peroxide, an Oxygen atom is assigned an oxidation number of -1 and in Superoxide, each oxygen atom is assigned an oxidation number of -1/2.

What Happens In The Rusting Of Iron?

a) Decomposition

b) Displacement

c) Oxidation

d) Reduction

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a) Decomposition

b) Displacement

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d) Reduction

- During rusting, iron and oxygen react in the presence of water or air moisture.
- During rusting in iron, Red-brown powder is coated on the iron.

Alkaline Medium Inhibits The Rusting Of Iron, Because:

a) OH- are produced

b) Non availability of H+ ions which reduces oxidation of Fe to Fe+2 ions

c) OH- ions are not produced

d) Rate of oxidation of iron is high

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- The reaction medium doesn't have any hydronium ion left and the oxidation reaction of iron cannot proceed.

On Exposure To Moist Air, Copper Gains A Green Coat On Its Surface Due To The Formation Of Which One Of The Following Compounds?

a) Copper carbonate

b) Copper oxide

c) Copper sulphate

d) Copper nitrate

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a) **Copper carbonate**

b) Copper oxide

c) Copper sulphate

d) Copper nitrate

- Copper objects lose their shine and form a green coating of basic copper carbonate.
- The copper object will form a green layer on its surface when it is exposed to air for a long time.

The Word Oxidation Means

a) The loss of electrons by an atom or a molecule

b) Combination of free oxygen with a substance

c) Combination of free hydrogen with a molecule

d) The loss of protons by an atom or a molecule

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- "oxidation" is defined as the addition of oxygen /electronegative element to a substance or removal of hydrogen/ electropositive element from a substance.

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) Oxidation number of hydrogen is always +1

b) Algebraic sum of oxidation number of all elements in the compound is zero

c) An element in the free or uncombined state has zero oxidation number

d) In all compounds oxidation number of fluorine is −1

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d) In all compounds oxidation number of fluorine is −1

- In the case of metal hydrides, the oxidation state of hydrogen becomes -1 and in elemental hydrogen, its oxidation state becomes zero.

Identify The Correct Statements With Reference To The Given Reaction

$P_4 + 3OH^- + 3H_2O \rightarrow PH_3 + 3H_2\,PO2-$

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.

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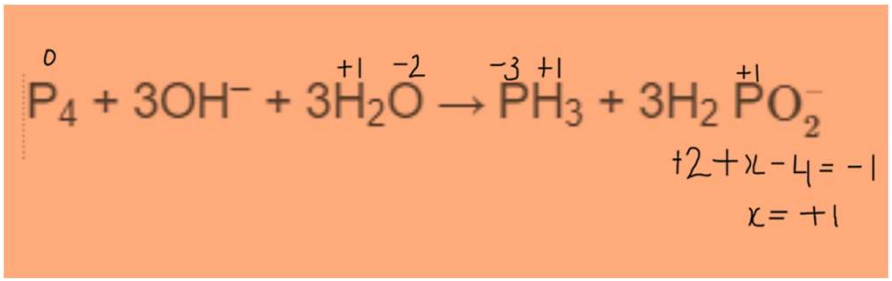

The Oxidation Reaction Which Produces Heat And Light Is

a) endothermic reaction

b) photochemical reaction

c) combustion reaction

d) More than one of the above

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- Combustion reactions themselves from their name means burning hence, these reactions produce energy in the form of heat and light like the burning of matchsticks.

On Treating A Compound With Warm Dil. H_2SO_4, Gas X Is Evolved Which Turns $K_2Cr_2O_7$ Paper Acidified With Dil. H_2SO_4 To A Green Compound Y. X And Y Respectively Are :

a) X = SO_3, Y = $Cr_2(SO_4)_3$

b) X = SO_2, Y = $Cr_2(SO_4)_3$

c) X = SO_3, Y = Cr_2O_3

d) More than one of the above

On Treating A Compound With Warm Dil. H2SO4, Gas X Is Evolved Which Turns K2cr2o7 Paper Acidified With Dil. H2SO4 To A Green Compound Y. X And Y Respectively Are :

a) X = SO3, Y = Cr2(SO4)3

b) X = SO2, Y = Cr2(SO4)3

c) X = SO3, Y = Cr2O3

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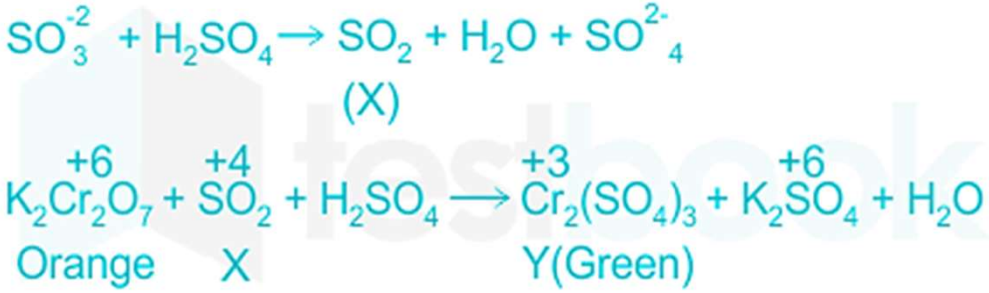

Potassium Permanganate Is Used To Purify Water As Its Is

a) sterilizing

b) oxidizing

c) reducing

d) leaching

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- Potassium permanganate ($KMnO_4$) is a strong oxidizing agent that oxidizes dissolved impurities from water such as iron, manganese, and hydrogen sulfide (H_2S) by converting them into solid particles.

Bleaching Action Of Chlorine Is By

a) Decomposition

b) Hydrolysis

c) Reduction

d) Oxidation

Bleaching Action Of Chlorine Is By

a) Decomposition

b) Hydrolysis

c) Reduction

d) Oxidation

- It requires moisture for its bleaching action. Chlorine reacts with water to form hydrochloric and hypochlorous acids.
- $Cl_2 + H_2O \longrightarrow HCl + HClO$

Iron Rusts Because Of _____ Reaction.

a) Oxidation

b) Reduction

c) Corrosion

d) Redox

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a) Oxidation

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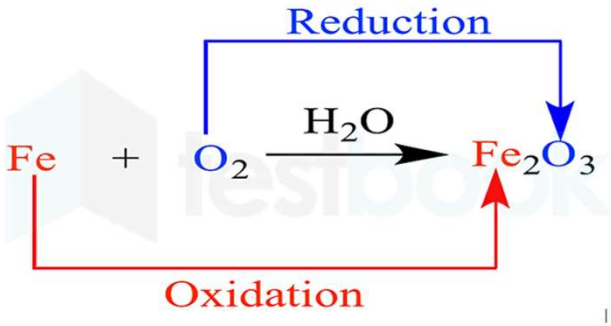

- During rusting, iron combines with oxygen in the presence of water. This is an oxidation reaction where oxygen acts as an oxidizing agent.
- Since oxygen also combines with the metal iron, this is a reduction reaction, where the metal iron acts as a reducing agent.

What Is Deposited On Iron In The Process Of Galvanization?

a) aluminium

b) zinc

c) copper

d) tin

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a) aluminium

b) zinc

c) copper

d) tin

- The Zinc layer protects the Iron surface from interacting with the atmosphere thus preventing corrosion of the surface.

Oxidation Number Of Oxygen In Ozone Is _____.

a) 0

b) -2

c) +2

d) -6

Oxidation Number Of Oxygen In Ozone Is _____.

a) **0**

b) -2

c) +2

d) -6

The most powerful oxidising agent among the following is:

(a) H_2SO_4

(b) H_3BO_3

(c) HPO_3

(d) H_3PO_4

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(a) H_2SO_4

(b) H_3BO_3

(c) HPO_3

(d) H_3PO_4

- H_2SO_4 is the most powerful oxidising agent.

Consider the following reaction:

$Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$

With reference to the above, which one of the following is the correct statement

(a) Zn is reduced to Zn2+ ions.

(b) Zn is oxidised to Zn2+ ions.

(c) Zn2+ ions are oxidised to Zn.

(d) Cu2+ ions are oxidized to Cu.

Consider the following reaction:

$Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$

With reference to the above, which one of the following is the correct statement

(a) Zn is reduced to Zn2+ ions.

(b) Zn is oxidised to Zn2+ ions.

- Zn is oxidised to Zn2+ ions by releasing electrons.

(c) Zn2+ ions are oxidised to Zn.

(d) Cu2+ ions are oxidized to Cu.

A standard hydrogen electrode has zero electrode potential because

(a) hydrogen is easiest to oxidize

(b) the electrode potential is assumed to be zero

(c) hydrogen atom has only one electron

(d) hydrogen is the lightest element

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- hydrogen is the lightest element

In the reaction:

$2Ag + 2H_2SO_4 \rightarrow Ag_2SO_4 + 2H_2O + SO_2$

Sulphuric acid acts as:

(a) Oxidising agent

(b) Reducing agent

(c) Catalyst

(d) Acid as well as oxidant

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- Sulphuric acid acts as acid as well as oxidant.

Which of the following is not a redox reaction?

(a) Burning of candle

(b) Rusting of iron

(c) Dissolving salt in water

(d) Dissolving Zinc in dil. H_2SO_4

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(a) Burning of candle

(b) Rusting of iron

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(d) Dissolving Zinc in dil. H_2SO_4

- Dissolving salt in water is not a redox reaction.

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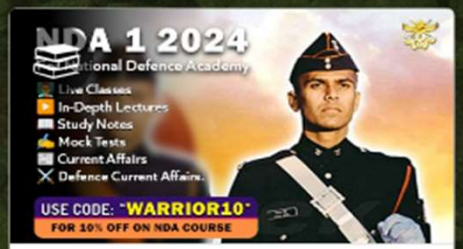

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