

A-Level Chemistry

Name: _____ Score: _____

1. The oxidation number of an uncombined element (like O_2 or Fe) is:
 - ☐ -2
 - ☐ 0
 - ☐ +1
 - ☐ equal to its group
2. When balancing a redox equation using oxidation numbers:
 - ☐ the total rise in oxidation number must equal the total fall
 - ☐ only the masses matter
 - ☐ the rise is always bigger than the fall
 - ☐ oxidation numbers are ignored
3. The usual oxidation number of oxygen in a compound is:
 - ☐ +6
 - ☐ 0
 - ☐ -2 (but -1 in peroxides)
 - ☐ +2
4. Disproportionation is a reaction in which:
 - ☐ two different elements are oxidised
 - ☐ no electrons move
 - ☐ only reduction happens
 - ☐ the same element is both oxidised and reduced
5. In KMnO_4 , K is +1 and each O is -2. What is the oxidation number of Mn? (give the number, e.g. 7)

6. An oxidising agent:
 - ☐ always contains oxygen
 - ☐ does not take part in redox
 - ☐ takes electrons from another species and is itself reduced
 - ☐ gives electrons away and is itself oxidised

7. A substance that loses electrons in a reaction is being _____.

8. An oxidising agent is itself oxidised during a reaction.

☐ True ☐ False

9. Using OIL RIG, oxidation is:

☐ loss of electrons (oxidation number goes up)

☐ loss of neutrons

☐ gain of electrons

☐ gain of protons

10. A reducing agent:

☐ always contains hydrogen

☐ gives electrons to another species and is itself oxidised

☐ cannot change oxidation number

☐ takes electrons and is itself reduced

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1. **0**

A free, uncombined element always has an oxidation number of 0.

2. **the total rise in oxidation number must equal the total fall**

Every electron lost is gained, so the total increase in oxidation number equals the total decrease.

3. **−2 (but −1 in peroxides)**

Oxygen is normally −2, except −1 in peroxides.

4. **the same element is both oxidised and reduced**

In disproportionation one element goes both up and down in oxidation number (e.g. $\text{Cl}_2 \rightarrow \text{Cl}^-$ and ClO^-).

5. **7**

$+1(\text{K}) + \text{Mn} + 4 \times (-2) = 0$, so $\text{Mn} = +7$.

6. **takes electrons from another species and is itself reduced**

An oxidising agent removes electrons from another species, so it gains electrons and is reduced itself.

7. **oxidised**

OIL: Oxidation Is Loss of electrons.

8. **False**

False. An oxidising agent gains the electrons lost by the other species, so it is itself reduced.

9. **loss of electrons (oxidation number goes up)**

Oxidation Is Loss of electrons; the oxidation number rises. Reduction Is Gain (number falls).

10. **gives electrons to another species and is itself oxidised**

A reducing agent donates electrons, causing reduction of the other species while being oxidised itself.