Redox reaction examples with answers

Determine the number of oxidation of the elements in each of the following compounds: a. H2CO3 H: +1, or: -2, C: +4 b. N2 N: 0 c. ZN (OH) 42- ZN: 2+, H: +1, or: -2 d. No2 N: 3, or: -2 e. Lih Li: +1, H: -1 f. FE3O4 FE: +8/3, or: -2 Identify species are oxidized and reduced in each of the following reactions: a. CR + + + SN4 CR3 + + SN2 + CR +: oxidized, SN4 +: B reduced. 3 HG2 + + 2 FE (s) 3 + 2 HG2 FE3 + HG2 +: Reduced, FE: oxidized c. 2 AS (s) + 3 CL2 (G) 2 ASCL3 As: oxidized, CL2: Reduced would you use an oxidizing or reducing agent so that the following reactions occur? a. Clo3- clo2 Ã, ã, reducing agent b. SO42- S2- Ã, Ã, reducing agent c. Mn2 + mno2 Ã, ã, oxidizing agent d. ZN ZNCL2 Ã, Ã, oxidizing agent writing balanced equations for the following REDOX reactions: a. 2 Nabr + CL2 2 NACL + BR2 b. FE2O3 + 3 CO 2 FE + 3 CO2 in acid solution c. 5 Co + I2O5 5 CO2 + I2 In writing solution Balanced basic equations for the following reactions: a. CR (OH) 3 + BR2 CRO42- + BR- Basic solution 10 Oh- + 2 CR (OH) 3 + 3 BR2 2 CRO42- + 8 + H2O 6 BR- b. O2 + SB H2O2 + SBO2- in base solution 2 OH- + 2 SB + 3 O2 + 2 H2O 2 SBO2- + 3 H2O2 c. HCOOH + MNO4- CO2 + MN2 + IN ACIDE SOLUTION 6 H + + 2 + 5 MNO4- HCOOH 2 MN2 + + 8 + H2O 5 CO2 d. ClO2- Clo2 + Cl- sour solution 5 CLO2- + 4 H + 4 ClO2 + CL- + 2 H2O Evaluates balanced reactions half of the following reactions: a. Ni2 + 2 h2o + fe ni (oh) 2 + fe (oh) 2 in basic solution 2 h2o + nio2 + 2 umber (oh) 2 + 2 oh- oh- 2 + fe fe (oh) 2 + 2 e - B. CO2 + 2 NH2OH CO + N2 + 3 H2O in CO2 Basic solution + H2O + 2 E-CO + 2 OH- OH- 2 + 2 NH2OH N2 + 2 E- + 4 H2O C. 2 H + + H2O2 + 2 FE2 + 2 FE3 + + 2 H2O in acid solution H2O2 + 2 E- + 2 H + 2 H2 or FE2 + FE3 + + E-D. H + + 2 H2O + 2 + 5 MNO4- SO2 2 MN2 + + 5 hSO4- in acid solution 8 h + + + 5 MNO4- E- MN2 + + 4 H2O SO2 + 2 H2O HSO4- + 3 H + + 2 E - oxidation and oxidation reduction - reduction oxidation reactions The term was originally used to describe reactions in which an element combines with oxygen. Example: the reaction between magnesium metal and oxygen to form magnesium oxide involves magnesium oxidation. The reduction of the term comes from the latin stem meaning "to drive back". All that returns to the magnesium metal then implies the reduction. The reaction between magnesium and carbon oxide to 2000c to form metallic magnesium and carbon monoxide is an example of magnesium magnesium oxide reduction. After the electrons have been discovered, the chemists became convinced that oxidation reduction reactions involved the transfer of electrons from one atom to another. From this perspective, the reaction between magnesium and oxygen is written as follows. 2 mg + O2 2 [MG2 +] [O2-] During this reaction, each magnesium atom loses two electrons to form an ion MG2 +. MG MG2 + + 2 E- and, each O2 molecule earns four electrons to form a couple of o2s. O2 + 4 E-2 O2- Become the electrons are not created nor-created nor destroyed in a chemical reaction, oxidation and reduction are connected. It is impossible to have one without the other, as shown in the figure below. The role of oxidation numbers in oxidation reduction reactions that chemists eventually extended the idea of oxidation and reduction of reactions that do not formally carry out the transfer of electrons. Consider the following reaction. CO (G) + H2O (G) CO2 (G) + H2 (G) How can be seen in the figure below, the total number of electrons in the valence shell of each atom remains constant in this reaction. What changes in this reaction is the status of oxidation of these atoms. The carbon oxidation status increases by +2 to +4, while the oxidation state of hydrogen decreases by +1 to 0. oxidation and reduction are therefore better defined as Oxidation occurs when the number of oxidation of an atom becomes larger. The reduction occurs when the number of oxidation of an atom becomes smaller. The oxidation numbers against the real ion charge The ionic and covalent terms describe the extremes of a bonding continuum. LA LA Some covalent character in even the most ionic compounds and vice versa. It is useful to think of the compounds of the main metals of the group as if they contained positive and negative ions. The chemistry of magnesium oxide, for example, is easy to understand if we assume that the MGO contains MG2 + and O2-ions. But no compound is 100% ionic. There are experimental evidence, for example, that the real charge on magnesium and oxygen atoms in MGO is +1.5 and -1.5. The oxidation states provide a compromise between a powerful model of oxidation reduction reactions based on the intake that these compounds contain ions and our knowledge that the true charge on the ions in these compounds is not as big as this model provides. By definition, the status of oxidation of an atom is the charge that Atom would have brought if the mixture was purely ionic. For active metals in â € AL> FE PRACTICE Problem 4: Use the following equations to determine the relative strengths of sodium, magnesium, aluminum and calcium metal as reducing agents. 2 NA + MGCL22 NACL + MG AL + MGBR2 CA + MGI2 CAI2 + MG CA + 2 NACL Click here to check the response to practice Problem 4 4

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