Multiple Choice – Circle The Best Answer.

1. Oxidation-reduction (redox) reactions involve the loss and gain of:
   a. electrons    b. protons    c. neutrons

2. A redox reaction equation can be recognized because the:
   a. equation is not balanced
   b. reactants and products are all ions
   c. oxidation numbers of two of the elements change
   d. all of these

3. The oxidation number of a neutral atom:
   a. is the charge on the atom
   b. can be determined from the element’s position on the periodic table
   c. is zero
   d. none of these

4. In a compound, the sum of the oxidation numbers of all the elements equals:
   a. zero    c. the charge of the compound
   b. +1    d. –1

5. In an ionic compound, the oxidation numbers of the elements are:
   a. the charges of the ions    c. the apparent charges of the atoms
   b. the charges of the atoms    d. the apparent charges of the ions

6. In a compound or polyatomic ion, the oxidation number for hydrogen is usually:
   a. 0    b. +1    c. –1    d. –2

7. In a compound or polyatomic ion, the oxidation number for oxygen is usually:
   a. 0    b. +1    c. –1    d. –2

8. The oxidation number of S in H2SO4 is:
   a. +6    b. +8    c. –6    d. –2

9. The oxidation number of chlorine in Cl2 is:
   a. –1    b. –2    c. 0    d. +3

10. The oxidation number of chlorine in HCl is:
    a. –1    b. –2    c. 0    d. +3

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11. The oxidation number of chlorine in (ClO₂)⁻ is:
   a. −1  b. −2  c. 0  d. +3

12. In the polyatomic ion, (NO₃)⁻, the sum of the oxidation numbers must equal:
   a. 0  b. −1  c. −2  d. 3

13. The oxidation number of Na in NaCl is:
   a. +1  b. −1  c. 0  d. impossible to determine

14. Oxidation is the:
   a. loss of electrons  b. gain of electrons  c. loss of protons  d. gain of neutrons

15. When an element is oxidized, its oxidation number:
   a. increases  b. decreases

16. This represents the ________________ of copper: Cu+2 \(\rightarrow\) Cu0
   a. oxidation  b. reduction

17. The study of electricity related redox reactions is called:
   a. electricity  b. electrochemistry  c. electrolysis  d. organic chemistry

18. Which of these reactions is not a redox reaction?
   a. \(2H₂ + O₂ \rightarrow 2 H₂O\)
   b. \(Mg + Cl₂ \rightarrow MgCl₂\)
   c. \(NaCl + KBr \rightarrow KCl + NaBr\)
   d. \(Mg + CuCl₂ \rightarrow MgCl₂ + Cu\)

19. The forced separation of water into hydrogen and oxygen by the use of electricity is an example of:
   a. a battery  c. electrolysis
   b. a reaction that is not redox  d. direct exchange of electrons

20. In a battery:
   a. an electric current is produced  c. chemicals are separated
   b. electron exchange occurs through a wire  d. all of these