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AP Chemistry – How Much Do You Remember? – 1

Name _____Per ___

1. What are the 3 fundamental subatomic particles?

   _____
   _____
   _____

2. Draw a picture of a sulfur atom. Use the Bohr model.

3. What is the electron configuration of chromium? _____

4. What is the electron configuration of a Ti^{4+} ion? _____

5. Fill in the following chart:

	Protons	Neutrons	Electrons
C-12			
Ag-106			
Cl^{-1}-35			
Cu^{2+}-64			

6. Balance the following reaction: $Si_2H_3 + O_2 \rightarrow SiO_2 + H_2O$

7. In the reaction above, if 25.0 grams of disilicon trihydride is reacted in an excess of oxygen, how many grams of silicon dioxide would be produced?

8. If the reaction in #6 has a 87.5% yield, how much water should be expected to be produced?

9. What is the difference between ionic and covalent bonds?

10. Why are the bonds in sodium fluoride ionic while the bonds in sulfur hexafluoride are covalent?

11. When a match burns, it is the reaction of phosphorus and oxygen in the air. Is this reaction spontaneous?

12. Is the reaction described in #11 and endothermic or exothermic reaction? How do you know?

13. Which of the following experimental procedures is used to separate two substances by taking advantage of their differing boiling points?

(a) Titration
(b) Distillation
(c) Filtration
(d) Decantation
(e) Hydration

14. A pure sample of $KClO_3$ is found to contain 71 grams of chlorine atoms. What is the mass of the sample?

(a) 122 grams
(b) 170 grams
(c) 209 grams
(d) 245 grams
(e) 293 grams

15. The boiling point of water is known to be lower at high elevations. This is because

(a) hydrogen bonds are weaker at higher temperatures
(b) the heat of fusion is lower at high elevations
(c) the vapor pressure of water is higher at high elevations
(d) the atmospheric pressure is lower at high elevations
(e) water is more dense at high elevations

16. Classify each of the following as a pure substance or a mixture; if it is a mixture, indicate whether it is homogeneous or heterogeneous.

a) air _____
b) tomato juice _____
c) iodine crystals _____
d) sand _____

17. A match is lit and held under a cold piece of metal. The following observations are made:

a) The match burns. _____
b) The metal becomes warmer. _____
c) Water condenses on the metal. _____
d) Carbon soot is deposited on the metal. _____

Label the four observations as physical or chemical changes.

18. Use appropriate SI prefixes to write the following measurements without using the exponent.

a) 6.5×10^{-6} m _____ b) 6.35×10^{-4} L _____
c) 2.5×10^{-3} L _____ d) 4.23×10^{-9} m^3 _____
e) 12.5×10^{-8} kg _____ f) 3.5×10^{-11} s _____

19. Convert:

a) 1.4×10^{2} kg = _____ g
b) 0.0023 μm = _____ nm
c) 7.25×10^{-4} s = _____ ms

20. a) After the label fell off a bottle containing a clear liquid believed to be benzene, a chemist measured the density of the liquid to verify its identity. A 25.0 mL portion of the liquid had a mass of 21.95 g. A chemistry handbook lists the density of benzene at $15^{\circ C}$ as 0.8787 g/mL. Is the calculated density in agreement with the tabulated value? (Show your work)

b) An experiment requires 15.0 g of cyclohexane, whose density at $25^{\circ C}$ is 0.7781 g/mL. What volume of cyclohexane should be used?

c) A spherical ball of lead has a diameter of 5.0 cm. What is the mass of the sphere if lead has a density of 11.34 g/cm^3? (The volume of a sphere is $(4/3)\pi r^3$.)