

SAT Chemistry Practice Test 14

SAT Chemistry Practice Test 1: Part B

1. What is the number of protons and neutrons in an atom with mass number 89 and atomic number 39?

- A. 50 protons and 50 neutrons
- B. 50 protons and 39 neutrons
- C. 39 protons and 89 neutrons
- D. 39 protons and 50 neutrons
- E. 39 protons and 39 neutrons

2. $\dots\text{C}_4\text{H}_{10}(g) + \dots\text{O}_2(g) \rightarrow \dots\text{CO}_2(g) + \dots\text{H}_2\text{O}(l)$

When the above equation is balanced using the lowest whole-number terms, the coefficient of CO_2 is

- A. 2
- B. 4
- C. 8
- D. 10
- E. 13

3. Which of the following is closest in mass to a proton?

- A. Alpha particle
- B. Positron
- C. Neutron
- D. Electron
- E. Hydrogen molecule

4. What is the approximate percentage composition by mass of the element oxygen in the compound HClO_4 ?

- A. 16%
- B. 32%
- C. 50%
- D. 64%
- E. 75%

5. If two atoms that differ in electronegativity combine by chemical reaction and share electrons, the bond that joins them will be

- A. metallic
- B. ionic
- C. a hydrogen bond
- D. nonpolar covalent
- E. polar covalent

6. When the temperature of a 20-gram sample of water is increased from 10°C to 30°C, the heat transferred to the water is

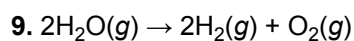
- A. 600 calories
- B. 400 calories
- C. 200 calories
- D. 30 calories
- E. 20 calories

7. What is the oxidation state of chromium, Cr, in the compound potassium dichromate, $K_2Cr_2O_7$?

- A. 1
- B. 2
- C. 3
- D. 6
- E. 12

8. An aqueous solution with pH 5 at 25°C has a hydroxide ion (OH^-) concentration of

- A. 1×10^{-11} molar
- B. 1×10^{-9} molar
- C. 1×10^{-7} molar
- D. 1×10^{-5} molar
- E. 1×10^{-3} molar



The volume of water vapor required to produce 44.8 liters of oxygen by the above reaction is

- A. 11.2 liters
- B. 22.4 liters
- C. 44.8 liters
- D. 89.6 liters
- E. 100.0 liters

10. When 190 grams of MgCl_2 are dissolved in water and the resulting solution is 500 milliliters in volume, what is the molar concentration of MgCl_2 in the solution?

- A. 2.0 M
- B. 4.0 M
- C. 8.0 M
- D. 12.0 M
- E. 16.0 M

11. When a fixed amount of gas has its Kelvin temperature doubled and its pressure doubled, the new volume of the gas is

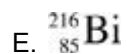
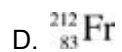
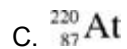
- A. four times greater than its original volume
- B. twice its original volume
- C. unchanged
- D. one-half its original volume
- E. one-fourth its original volume

12. In 12.4 hours, a 100 gram sample of an element decays so that its mass is 25 grams. What is the approximate half-life of this radioactive substance?

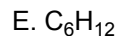
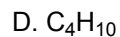
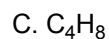
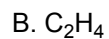
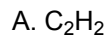
- A. 1.6 hours
- B. 3.1 hours
- C. 6.2 hours
- D. 24.8 hours
- E. 49.6 hours

13. In the equation $Q \rightarrow {}_2^4\text{He} + {}_{85}^{216}\text{At}$, the species represented by Q is

- A. ${}_{87}^{220}\text{Fr}$
- B. ${}_{83}^{212}\text{Bi}$



14. A compound with a molecular weight of 56 and has an empirical formula of CH_2 . What is its molecular formula?



15. The change in heat energy for a reaction is best expressed as a change in

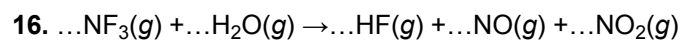
A. enthalpy

B. absolute temperature

C. specific heat

D. entropy

E. kinetic energy



When the equation for the reaction above is balanced, how many moles of NF_3 would be required to react completely with 6 moles of H_2O ?

A. 0.5 mole

B. 1 mole

C. 2 moles

D. 3 moles

E. 4 moles

17. Which characteristic is associated with bases?

A. React with metal to produce hydrogen gas

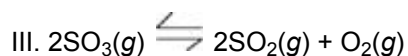
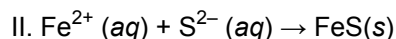
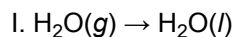
B. Donate an unshared electron pair

- C. Always contain the hydroxide ion in their structure
- D. Taste sour
- E. Formed by the reaction of a nonmetal oxide and water

18. An element has the following properties: shiny, brittle, poor electrical conductivity, and high melting point. This element can be best classified as a(n)

- A. alkali metal
- B. halogen
- C. metalloid
- D. transition metal
- E. noble gas

19. Which of the following forward processes produces a decrease in entropy?



- A. I only
- B. III only
- C. I and II only
- D. II and III only
- E. I, II, and III

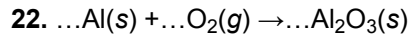
20. Which of the following will raise the boiling point of a sample of water?

- A. Heat the water
- B. Mix gasoline into the water
- C. Bring the water sample to a higher altitude
- D. Place the water sample on a magnetic stirrer
- E. Dissolve table sugar into the water

21. Elements H and J lie in the same period. If the atoms of H are smaller than the atoms of J, then compared to atoms of J, atoms of H are most likely to

- A. exist in a greater number of isotopes
- B. exist in a lesser number of isotopes

- C. exist in a greater number of oxidation states
- D. has a greater positive charge in their nuclei
- E. have a lesser positive charge in their nuclei



When the equation representing the reaction shown above is completed and balanced and all coefficients are reduced to the lowest whole-number terms, the coefficient of $\text{O}_2(g)$ is

- A. 1
- B. 2
- C. 3
- D. 4
- E. 6

23. Which of the following solids has a brilliant blue color?

- A. $\text{Ca}(\text{OH})_2$
- B. KCl
- C. NaBr
- D. Fe_2O_3
- E. CuSO_4