

SAT Chemistry Practice- Paper 37

Directions: Every question below contains two statements, I in the left-hand column and II in the right-hand column. For each question, decide if statement I is true or false and whether statement II is true or false, and fill in the corresponding T or F ovals on your answer sheet. *Fill in oval CE only if statement II is a correct explanation of statement I.

1. According to the Kinetic Molecular Theory, the particles of a gas are in random motion above absolute zero

BECAUSE

the degree of random motion of gas molecules varies inversely with the temperature of the gas.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

2. An electron has wave properties as well as particle properties

BECAUSE

the design of a particular experiment determines which properties are verified.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

3. The alkanes are considered a homologous series

BECAUSE

homologous series have the same functional group but differ in formula by the addition of a fixed group of atoms.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

4. When an atom of an active metal becomes an ion, the radius of the ion is less than that of the atom

BECAUSE

the nucleus of an active metallic ion has less positive charge than the electron "cloud."

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

5. When the heat of formation for a compound is negative, ΔH is negative

BECAUSE

a negative heat of formation indicates that a reaction is exothermic with a negative enthalpy change.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

6. Water is a polar substance

BECAUSE

the sharing of the bonding electrons in water is unequal.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

7. A catalyst accelerates a chemical reaction

BECAUSE

a catalyst lowers the activation energy of the reaction.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

8. Copper is an oxidizing agent in the reaction with silver nitrate solution

BECAUSE

copper loses electrons in a reaction with silver ions.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

9. The rate of diffusion (or effusion) of hydrogen gas compared with that of helium gas is 1 : 4

BECAUSE

the rate of diffusion (or effusion) of gases varies inversely as the square root of the molecular mass.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

10. A gas heated from 10°C to 100°C at constant pressure will increase in volume

BECAUSE

as Charles's Law states, if the pressure remains constant, the volume varies directly as the absolute temperature varies.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

11. The Gibbs free-energy equation can be used to predict the solubility of a solute

BECAUSE

the solubility of most salts increases as temperature increases.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

12. The complete electrolysis of 45 grams of water will yield 40 grams of H₂ and 5 grams of O₂

BECAUSE

water is composed of hydrogen and oxygen in a ratio of 8 : 1 by mass.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

13. 320 calories or 1.34×10^3 joules of heat will melt 4 grams of ice at 0°C

BECAUSE

the heat of fusion of water is 80 calories per gram or 3.34×10^2 joules per gram.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

14. When 2 liters of oxygen gas react with 2 liters of hydrogen completely, the limiting factor is the volume of the oxygen

BECAUSE

the coefficients in balanced equations of gaseous reactions give the volume relationships of the involved gases.

- A. T,T
- B. T,F
- C. F,T

- D. F,F
- E. T,T,CE

15. Water is a good solvent for ionic and/or polar covalent substances

BECAUSE

water shows hydrogen bonding between oxygen atoms.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

16. Ammonia gas, NH_3 , has a smaller density than argon gas, Ar, at STP

BECAUSE

the density of a gas at STP is found by dividing the molar mass by 22.4 liters.

- A. T,T
- B. T,F
- C. F,T
- D. F,F
- E. T,T,CE

Question	Correct Answer
1	B
2	E
3	E
4	B
5	E
6	E
7	E
8	C
9	C
10	E
11	C
12	D

13	E
14	C
15	B
16	E