

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

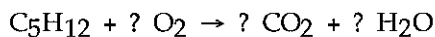
- 1) How many grams of glucose ($C_6H_{12}O_6$) are in 3.55 moles of glucose? 1) _____
A) 426 g B) 50.7 g C) 639 g D) 180 g E) 103 g
- 2) At STP conditions, 11 g of SO_2 have a volume of 2) _____
A) 0.0076 L. B) 130 L. C) 250 L. D) 22 L. E) 3.8 L.
- 3) When KCl dissolves in water 3) _____
A) the K^+ ions are attracted to Cl^- ions on the KCl crystal.
B) the Cl^- ions are attracted to dissolved K^+ ions.
C) the K^+ ions are attracted to the partially positive hydrogen atoms of the water molecule.
D) the Cl^- ions are attracted to the partially negative oxygen atoms of the water molecule.
E) the K^+ ions are attracted to the partially negative oxygen atoms of the water molecule.
- 4) What is the molarity of a KCl solution made by diluting 75.0 mL of a 0.200 M solution to a final volume of 100. mL? 4) _____
A) 6.67 M B) 0.267 M C) 0.100 M D) 0.150 M E) 0.200 M
- 5) The O-H bond in water is polar because 5) _____
A) hydrogen is much more electronegative than oxygen.
B) oxygen is much more electronegative than hydrogen.
C) it is a hydrogen bond.
D) it is an ionic bond.
E) oxygen occupies more space than hydrogen.
- 6) What volume of 0.10 M NaOH can be prepared from 250. mL of 0.30 M NaOH? 6) _____
A) 0.75 L B) 750 L C) 0.25 L D) 0.075 L E) 0.083 L
- 7) What is the concentration, in $m/m\%$, of a solution prepared from 50.0 g NaCl and 150.0 g of water? 7) _____
A) 33.3% B) 25.0% C) 3.00% D) 0.250% E) 40.0%
- 8) Oil does not dissolve in water because 8) _____
A) oil is polar.
B) oil is nonpolar.
C) water is saturated.
D) oil is hydrated.
E) water is nonpolar.

- 9) The solubility of KI is 50 g in 100 g of H₂O at 20 °C. If 110 grams of KI are added to 200 grams of H₂O, 9) _____
- A) the solution will start boiling.
 - B) the solution will be unsaturated.
 - C) the solution will freeze.
 - D) a saturated solution will form.
 - E) all of the KI will dissolve.
- 10) The temperature of a 500. mL sample of gas increases from 150. K to 350. K. What is the final volume of the sample of gas, if the pressure in the container is kept constant? 10) _____
- A) 0.0095 mL B) 0.0047 mL C) 110 mL D) 1170 mL E) 210 mL
- 11) At STP, temperature and pressure have the values of 11) _____
- A) 0 K and 1 atm.
 - B) 760 K and 273 atm.
 - C) 0 K and 760 mm Hg.
 - D) 273 K and 1 mm Hg.
 - E) 273 K and 760 mm Hg.
- 12) The total pressure in a mixture of gases is equal to the partial pressure(s) of 12) _____
- A) the gas with the greatest number of moles.
 - B) the gas with the smallest number of moles.
 - C) the gas that occupies the largest volume.
 - D) all the gases added together.
 - E) the gas with the highest molecular weight.
- 13) At 570. mm Hg and 25 °C, a gas sample has a volume of 2270 mL. What is the final pressure (in mm Hg) at a volume of 1250 mL and a temperature of 175 °C? 13) _____
- A) 210 mm Hg
 - B) 7000 mm Hg
 - C) 690 mm Hg
 - D) 470 mm Hg
 - E) 1560 mm Hg
- 14) A cyclopropane-oxygen mixture is used as an anesthetic. If the partial pressure of cyclopropane in the mixture is 330 mm Hg and the partial pressure of the oxygen is 1.0 atm, what is the total pressure of the mixture in torr? 14) _____
- A) 330 torr B) 1100 torr C) 1.4 torr D) 430 torr E) 760 torr
- 15) A tank contains helium gas at 490 mm Hg, nitrogen gas at 0.75 atm, and neon at 520 torr. What is the total pressure in atm? 15) _____
- A) 1600 atm
 - B) 0.55 atm
 - C) 1.5 atm
 - D) 2.1 atm
 - E) 1.0×10^3 atm

- 16) How many moles of neon occupy a volume of 14.3 L at STP? 16) _____
 A) 0.638 moles
 B) 36.7 moles
 C) 1.57 moles
 D) 32.0 moles
 E) 6.45 moles

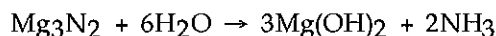
- 17) One mole of helium gas weighs 17) _____
 A) 1.00 g. B) 8.00 g. C) 4.00 g. D) 2.00 g. E) 3.00 g.

Pentane (C₅H₁₂) reacts with oxygen (O₂) to form carbon dioxide (CO₂) and water (H₂O) according to the following reaction. Answer the following question(s) about this reaction.



- 18) What is the coefficient for water in the balanced equation? 18) _____
 A) 4 B) 8 C) 6 D) 5 E) 2

For the following question(s), consider the following balanced equation.

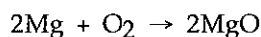


- 19) When 2 moles of Mg₃N₂ are allowed to react, how many moles of H₂O also react? 19) _____
 A) 8 moles B) 1 mole C) 12 moles D) 4 moles E) 6 moles

- 20) In an oxidation–reduction reaction, the substance oxidized always 20) _____
 A) shows a loss of electrons.
 B) shows a gain of electrons.
 C) takes on oxygen atoms.
 D) becomes a charged species.
 E) gives up hydrogen atoms.

- 21) Which of the following describes an oxidation? 21) _____
 A) loss of electrons or loss of oxygen
 B) gain of electrons or loss of H
 C) loss of electrons or gain of hydrogen
 D) gain of electrons or gain of oxygen
 E) loss of electrons or gain of oxygen

For the following question(s), consider the following equation.

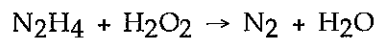


- 22) The number of moles of MgO produced when 0.20 mole of O₂ reacts completely is 22) _____
 A) 0.20 mole. B) 0.40 mole. C) 0.60 mole. D) 0.10 mole. E) 0.80 mole.

23) One mole of neon atoms has a mass of 23) _____
A) 30.2 g.
B) 10.0 g.
C) 14.0 g.
D) 20.2 g.
E) 6.02×10^{23} g.

24) The _____ is the minimum energy needed for a chemical reaction to begin. 24) _____
A) activation energy
B) reaction energy
C) energy of reactants
D) heat of reaction
E) energy of products

25) Which of the following correctly gives the best coefficients for the reaction below? 25) _____



A) 2, 4, 2, 8 B) 2, 4, 2, 4 C) 1, 2, 1, 4 D) 1, 1, 1, 1 E) 1, 4, 1, 4