

Lesson 179: Final Exam

Chemistry with Lab

1. Match the unit of measure to the metric equivalent:

- | | |
|---------------|----------------|
| _____ gram | a. length |
| _____ Celsius | b. mass |
| _____ liter | c. volume |
| _____ meter | d. temperature |

2. Number the steps of the scientific method in the correct order:

- _____ Construct hypothesis
- _____ Ask a question
- _____ Report results
- _____ Do background research
- _____ Test with experiment

3. Write 0.0056 in scientific notation.

4. Of what does an atom consist?

5. What part of the periodic table is a group?

6. A unit of magnesium carbonate contains one magnesium atom, one carbon atom, and three oxygen atoms. What is its chemical formula?

7. Who postulated the term “quanta” to explain light?

8. What term describes the average of the masses of all of an element’s isotopes (often displayed as a decimal number on the periodic table of the elements)?

9. A proton has what electrical charge?

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10. Who arranged the elements on the periodic table by increasing atomic number, like we see it today?
11. What is the term for the energy required to remove an electron from a neutral atom?
12. _____ bonding produces substances that are hard, or difficult to crush.
13. When an atom gains electrons, an ion with a _____ charge is formed.
14. Determine whether the compound NH_3 is ionic or covalent and name it appropriately.
15. Determine whether the compound zinc sulfide is ionic or covalent and write the appropriate formula for it.
16. Use the activity series to write balanced chemical equations for single replacement reactions. If no reaction will occur, write "NR."
$$\text{Cl}_2(\text{g}) + \text{NaBr}(\text{aq})$$
17. Solid lithium hydroxide reacts with carbon dioxide to form solid lithium carbonate and liquid water.
18. What is the molecular formula for a compound with an empirical formula of NO_2 and a molar mass of 92.0 g/mol?

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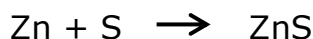
19. Convert 45g Se to moles of Se.

20. Lithium combines with oxygen according to the following equation. How many grams of Li_2O can be formed when 2.00g of lithium reacts with 2.00g of oxygen? (Atomic mass: Li = 6.94, O = 16.00)



- a. 3.63 b. 3.74 c. 4.00 d. 3.12

21. Zinc and sulfur react to form zinc sulfide. How many grams of ZnS can be formed when 12.0g of Zn reacts with 6.0g of S? (Atomic mass: Zn = 65.38, S = 32.06)



- a. 19.7 b. 17.9 c. 13.8 d. 18.5

22. When atmospheric pressure increases, how does the height of the column of mercury change?

23. A quantity of gas is collected over water at 15°C . The manometer indicated a pressure of 24.0 kPa. What would be the pressure of the dry gas? (The constant needed is 1.7 kPa.)

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24. How many liters of 4M solution can be made using 100 grams of lithium bromide?
25. What is the concentration of a solution with a volume 3.3mL that contains 12 grams of ammonium sulfite?
26. Define solubility.
27. (Refer to the linked graph for numbers 27 and 28.) At 50°C, how many grams of KNO_3 will dissolve?
28. _____ and _____ have the same solubility at approximately 78°C.
29. Name this acid: H_2SO_3 .
30. Name this base or salt: MgSO_4 .
31. Calculate the amount of heat released when 25.0g of water at 25.0°C cools to 0.0°C.
32. Calculate the amount of heat released when the same sample from number 31 freezes.

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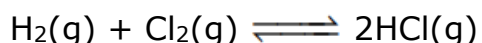
33. What changes take place in the nucleus when an alpha particle is emitted?

34. Which particle is associated with beta decay?

35. In the reaction $2\text{NO}(\text{g}) + \text{H}_2(\text{g}) \rightleftharpoons \text{N}_2\text{O}(\text{g}) + \text{H}_2\text{O}(\text{g}) + 36 \text{ kJ}$, which direction will the equilibrium shift if the pressure is increased?

- a. left b. right

36. How would an increase in pressure affect the $[\text{H}_2]$ in the following reaction?



- a. increase b. decrease c. no change

37. List the 3 types of radiation (α , β , γ) in order from least penetrating to most penetrating.

38. Does the identity of an atom change during radioactive decay? Why or why not?

39. What is the word equation for the neutralization of a strong acid and strong base?

40. Which answer best describes a substance whose formula is O_2 ?

- a. a compound b. an atom c. an element

41. Calculate the molar mass for ethane, C_2H_6 .

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42. When solid potassium nitrate is heated, it decomposes to solid potassium nitrite, and oxygen gas is evolved. The type of bonding that results in volatile liquids is:

- a. ionic b. covalent c. metallic

43. Which element is a member of the Transition Metal family?

- a. Zn b. Mg c. At d. Ca

44. What is the term for the region of space where an electron is likely to be found?

- a. Orbital b. Home c. Sector d. Section