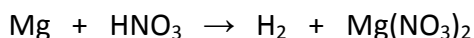


SNC2D EXAM REVIEW

Chemistry

1. Which element has 9 protons? _____
2. Which element has 26 neutrons? _____
3. What name is given to the elements in group #2? _____
4. What is the charge on the ions of elements from group 17? _____
5. Define physical and chemical properties and provide an example for each type.
6. Use the chemical equation below to explain what mass of hydrogen would be produced if 5.0 g of magnesium were mixed with 10.0 g of nitric acid and 7.5 g of magnesium nitrate is formed.



7. Fill in this chart using the periodic table:

Compound	Number of different elements	Total number of atoms	Compound	Names of elements	Number of atoms of each element
$\text{Al}_2(\text{SO}_3)_3$			CH_3COOH		

8. Find the charge for the following ions:
 - a. Calcium ion _____
 - b. Fluoride ion _____
 - c. Magnesium ion _____
 - d. Hydrogen _____
 - e. Sulfide ion _____
 - f. Potassium ion _____
9. Compare **molecular** and **ionic compounds** with respect to:
 - a. Types of elements in each compound
 - b. How the bond is formed
10. List the **properties** of molecular and ionic compounds.
11. Write the chemical formula for the compounds formed between the following pairs of ions:
 - a. calcium and fluorine
 - b. aluminum and oxygen
 - c. magnesium and carbon
 - d. radium and iodine
 - e. ammonium and oxygen
 - f. magnesium and phosphate
 - g. lithium and hydroxide
 - h. hydrogen and nitrate
12. Classify the following compounds as either ionic or molecular, and name them:
 - a. P_2O_5
 - b. MgS
 - c. NCl_3
 - d. HBr (aq)
 - e. CO
 - f. Fe_3N
 - g. SF_6
 - h. $(\text{NH}_4)_3\text{PO}_4$
 - i. $\text{Pb}(\text{CO}_3)_2$
 - j. $\text{HNO}_3 \text{ (aq)}$

13. Write formulas for the following compounds:

- | | |
|---------------------------|-------------------------|
| a. sodium sulfide | f. trinitrogen monoxide |
| b. carbon tetrafluoride | g. hydroiodic acid |
| c. calcium sulfate | h. plumbous chlorate |
| d. stannous chloride | i. sulphur pentoxide |
| e. nickel (III) hydroxide | j. phosphoric acid |

14. Balance the following equations:

- | | |
|---|--|
| a. $\text{NaClO}_3 \rightarrow \text{NaCl} + \text{O}_2$ | e. $\text{C}_3\text{H}_6 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ |
| b. $\text{Ca}_3(\text{PO}_4)_2 + \text{SiO}_2 \rightarrow \text{P}_4\text{O}_{10} + \text{CaSiO}_3$ | f. $\text{Fe} + \text{Al}_2(\text{SO}_4)_3 \rightarrow \text{FeSO}_4 + \text{Al}$ |
| c. $\text{BF}_3 + \text{Li}_2\text{SO}_3 \rightarrow \text{B}_2(\text{SO}_3)_3 + \text{LiF}$ | g. $\text{Sn}(\text{OH})_2 \rightarrow \text{SnO} + \text{H}_2\text{O}$ |
| d. $\text{K}_2\text{O} \rightarrow \text{K} + \text{O}_2$ | h. $\text{AlCl}_3 + \text{Na}_2\text{CO}_3 \rightarrow \text{Al}_2(\text{CO}_3)_3 + \text{NaCl}$ |

15. Write a balanced chemical equation from the following word equations:

- lithium + chlorine gas \rightarrow lithium chloride
- barium sulphate + nitric acid \rightarrow barium nitrate + sulphuric acid

16. Describe the difference between acids and bases?

17. Provide 3 examples of common household acids and bases.

18. Give an example of a practical neutralization reaction.

19. Write the formula for nitric acid. _____

20. Write the formula for calcium hydroxide. _____

21. Write the neutralization reaction for the acid and base above.

22. All neutralization reactions can be classified as _____ reaction.

23. Write general equations of the 5 basic types of chemical reactions. For each type of chemical reaction, write the general reaction. Provide an example.

24. Draw the B-R diagram for the following elements: Calcium, Phosphorus, and Magnesium and nitrogen & fluorine ions.

25. Explain the pH scale.

Biology

26. What are the functions of each of the following organelles? (write the answer in your notebook)

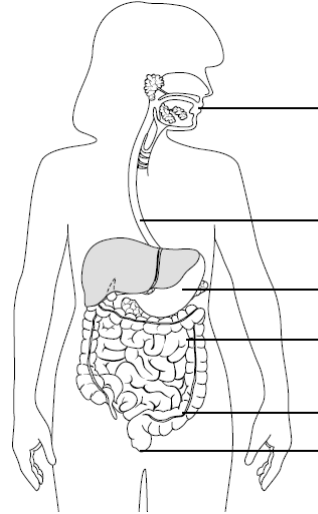
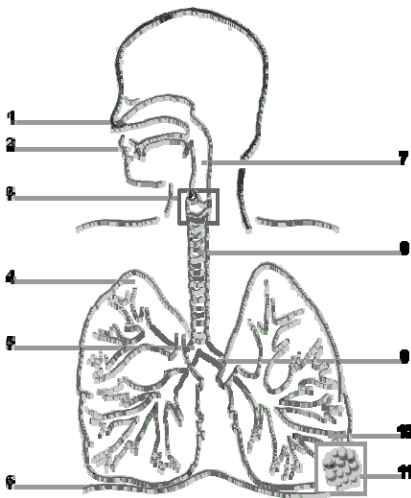
- | | |
|------------------|--------------------------|
| a. nucleus | f. vacuole |
| b. cell membrane | g. cytoplasm |
| c. cell wall | h. endoplasmic reticulum |
| d. mitochondrion | i. Golgi bodies |
| e. chloroplast | |

27. What are the major events during **interphase**?

28. List each of the stages of mitosis and describe them.

29. List 4 differences between plant and animal cells.

30. What are stem cells? Why are scientists studying them?
31. Name the four types of tissue, and give an example of each.
32. List the following terms in order from biggest to smallest: cell , organelle, organ, molecule, tissue, organism, organ system
33. Which organ system is depicted in each diagram? What is its major function? How do they interact?



34. What function is served by the digestive tract? Why does it have accessory organs?
35. What is the function of the lymphatic system?
36. Explain how gas exchange occurs.
37. Which muscle is the most important in controlling your breathing?
38. What is the difference between a vein, artery and capillary?
39. State the 4 main components of blood and explain what each component is responsible for.
40. What is the function of the nervous system?
41. What is the function of the musculoskeletal system?
42. Give 3 examples of 2 different organ systems interacting.

Physics

43. Describe how light is produced by each of these methods:
- | | |
|-----------------------|---------------------------------|
| a. Incandescence | f. Bioluminescence |
| b. Electric discharge | g. Triboluminescence |
| c. Fluorescence | h. Light-emitting diodes (LEDs) |
| d. Phosphorescence | i. Laser |
| e. Chemiluminescence | |
44. Know how to locate the image for all of the mirrors and lenses.

45. Rank the following sources of light in order of highest energy to lowest energy.
Radio waves Infrared Light Gamma rays X-rays Microwaves Ultraviolet Rays
46. What are the properties of the image seen from a plain mirror?
47. What is refraction, and why does it occur?
48. What is the index of refraction of a material?
49. Light travels from liquid ($n = 1.28$) to a glass at an angle of incidence of 25 degrees. If the angle of refraction in the glass is 21, what is the index of refraction of the glass?
50. What condition is required for total internal reflection to occur?
51. The critical angle of a material is 62° from the normal. Will total internal reflection occur when the angle of incidence is:
a. 70° b. 20° c. 32°
52. Draw ray diagrams for both a concave and convex mirrors when the image is outside of the focal point and between the focal point and the mirror.
53. How does a convex lens differ from a concave lens?
54. What are uses for convex and concave lens?
55. Where would you place an object in front of a convex lens if you wanted an image that is real and larger than the object?
56. Where would you place an object in front of a concave lens if you wanted an image that is virtual and larger than the object?
57. Explain what happens to the image of an object as you bring the object close to concave lens from a far distance moving toward the lens.
58. Draw ray diagrams for both a concave and convex lenses when the image is outside of the focal point and between the focal point and the lens.
59. Describe common uses for the different types of lenses and mirrors.

Climate change

60. How does weather differ from climate?
61. Describe the difference between the natural greenhouse effect and the anthropogenic (human caused) greenhouse effect.
62. List 3 main greenhouse gases. Which one is the most abundant?
63. What are 3 pieces of evidence that climate change is occurring.
66. List 3 ways that we can study past climates.