**Chemistry Unit Review**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Block: \_\_\_\_\_\_\_

1) Describe all three subatomic particles.

2) What is a cation and an anion?

3) What is the difference between an ionic bond and a covalent bond?

4) Complete the table.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Name** | **Symbol** | **Atomic Number** | **Atomic Mass** | **Protons** | **Neutrons** | **Electrons** | **Period** | **Group** | **Metal or** **Non-metal** |
| Lithium |  |  |  |  |  |  |  |  |  |
|  |  |  |  | 24 |  |  |  |  |  |
| Yttrium |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | 80 |  |  |  |
|  |  | 20 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | 4 | 9 |  |

5) Draw the Bohr Diagram for each element. Watch out for atom or ion!

a. Magnesium Atom b. Oxygen Ion

6) Label each bond as ionic or covalent and draw the Bohr diagram.

a. Lithium Fluoride (LiF)

b. Hydrogen Fluoride (HF) (Hydrogen acts like non-metal here)

7) Draw the **Lewis Dot Structure** for the following elements. **Watch out for atom or ion!**

a. Magnesium atom b. Lithium ion c. Phosphorus ion

8) Label each bond as ionic or covalent and draw the Lewis dot structure.

a. Sulfur (S2) b. Carbon Dioxide (CO2)

c. Magnesium Oxide (MgO) d. Hydrogen Chloride (HCl)

11) Balance and classify each of the following equations.

a) \_\_ Mn + \_\_ I2 🡪 \_\_ MnI4

b) \_\_ Al2(SO4)3 + \_\_ AgNO3 🡪 \_\_ Ag2SO4 + \_\_ Al(NO3)3

c) \_\_ C4H8 + \_\_ O2 🡪 \_\_ CO2 + \_\_ H2O

d) \_\_ Mg(OH)2 + \_\_ H3N 🡪 \_\_ Mg3N2 + \_\_ H2O

13) Write a balance chemical equation for the following sentence equation.

14) Complete the table.

|  |  |  |
| --- | --- | --- |
| Property | Acid | Base |
| Taste |  |  |
| Touch |  |  |
| Litmus |  |  |
| Reaction with metals |  |  |
| Electrical Conductivity |  |  |
| pH |  |  |
| Production of ions |  |  |

15) When the pH rises from 9 to 12, how many times more basic has the solution become?

16) When the pH lowers from 9 to 3, how many times more acidic has the solution become?

17) What colour is Indigo Carmine at the following pH levels?

a) pH 2 b) pH 12 c) pH 14

18) What is the pH range of a substance if it had the following results; Methyl Orange – red, Methyl Red – red, Bromthymol Blue – yellow, Litmus – red, Phenolphthalein – colourless and Indigo Carmine - blue?

19) Write a brief definition for each of the following terms.

a) Acid: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) Base: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) Salt: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d) Neutralization: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

22) Identify the acid, base and salt in the following neutralization equations.

a) 3H2SO4 + 2Al(OH)3 🡪 Al2(SO4)3 + 6H2O

b) 2CH3COOH + Mg(OH)2 🡪 Mg(CH3COO)2 + 2H2O

23) List the 5 ways to affect the rate of reaction and how each affects it.

|  |  |
| --- | --- |
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|  |  |

24) Define a diatomic element and give the list of the diatomic elements.