**TEST 1 REVISION: ATOMS, FORMULAE, BONDING AND SOLUTIONS**

**FULL NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ MARK: \_\_\_\_\_\_\_ /75 \_\_\_\_\_\_\_\_\_\_\_%**

1. Two different atoms are isolated and their atomic and mass numbers are identified.

If the atoms can be represented as

Determine (using a Periodic Table where necessary):

1. Number of **protons** in each atom

X: \_\_\_\_\_\_\_\_\_\_\_\_\_

D: \_\_\_\_\_\_\_\_\_\_\_\_\_ (2)

1. Number of **valence electrons** in each atom

X \_\_\_\_\_\_\_\_\_\_\_\_\_

D \_\_\_\_\_\_\_\_\_\_\_\_\_ (2)

1. the **ion** that each atom would be expected to produce if they reacted together.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (2)

1. the **formula of the compound** made by reacting X and D together.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1)

1. Explain the difference between a **period** (or row) and a **group** in the Periodic Table.

What do each of these tell us about the properties of elements.

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(2)

1. What is the difference between a MONATOMIC ION and a POLYATOMIC ION?

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(1)

1. Complete the table by putting in the **formulas**. The first one has been done for you.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Negative Ions** | | | | |
| **Positive Ions** | Chloride | Sulfide | Hydroxide | Nitrate | Sulfate |
| Ammonium | *NH4Cl* |  |  |  |  |
| Sodium |  |  |  |  |  |
| Magnesium |  |  |  |  |  |
| Copper (II) |  |  |  |  |  |
| Iron (III) |  |  |  |  |  |

(12)

1. **Correct** the following formulae **if necessary**

Iron II carbonate Fe2(CO3)3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Potassium iodide KI2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Tin II oxide Sn2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Calcium hydroxide CaOH2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Iron II sulfate FeSO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sodium hydrogencarbonate NaHCO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Iron (II) chloride FeCl \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Silver carbonate AgCO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(4)

1. Give the **chemical names** for the following formulae.

**FORMULA NAME**

ZnSO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

NH4Br \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cu(HCO3)2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

BaCO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(4)

1. Classify the following as having ionic, covalent or metallic bonds
2. NaCl \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Ag \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. CO2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. N2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Lead Iodide \_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. Oxygen gas \_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. Magnesium Bromide \_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. Brass \_\_\_\_\_\_\_\_\_\_\_\_\_\_

(4)

1. Write M (metallic), C (covalent) or I (Ionic) with each of the following statements to show the type of bonding it is associated with.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Periodic table location** | **Contains** | **Structural** | **Bond** | **Conductivity** | **Melting Point** |
| Left, Centre and Right | Positive Ions only | Soft if solid | Shared electron pairs | High for solids | Low to high |
| Left and Centre | Negative ions | Brittle and hard | Oppositely charged ions | Not as solids but does when molten | High |
| Right | No ions | Malleable | Delocalised electrons and positive ions | Not as solids or liquids | Usually low |

(9)

1. Fill in the blanks:

Metal atoms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons to form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ions.

Oxidation is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Reduction is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the periodic table tells us how many electrons are in the outer shell of an element.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the periodic table tells us how many shells contain electrons.

Non-metals become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reactive as the periods increase.

On the periodic table, Potassium is found in group \_\_\_\_\_\_\_\_ and period \_\_\_\_\_\_\_.

When ionic compounds are dissolved in water, their ions \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(5)

1. Draw electron dot diagrams for the following:
2. Na
3. Cl-1
4. O2
5. Cl2
6. CaCl2
7. Ca2+

(6)

1. Write the chemical formula for the following covalent compounds

Sulfur trioxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Nitrogen dioxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Diphosphorus pentaoxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Carbon tetrachloride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(4)

1. Draw the electron shell configuration diagrams for the following:
2. An oxide ion
3. A potassium atom

(2)

1. Write the correct term next to each definition

(3)

A mixture formed when a substance is dissolved in a liquid

The substance that dissolves in a liquid

A substance that will not dissolve

An insoluble solid that emerges from a liquid solution

A substance that will dissolve

The liquid that dissolves a substance

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Identify the following ionic solids as soluble or insoluble in water

(4)

Mg3(PO4)2

KBr

AgNO3

CuSO4

FeS

Aluminium Hydroxide

Potassium Carbonate

Calcium Chloride

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. When the following solutions are mixed write the formula for the products formed and identify the solubility of each product.

(8)

* 1. AgNO3 (aq) + NaCl (aq)
  2. FeCl3 (aq) + NaOH (aq)
  3. K2CO3 (aq) + Ca(NO3)2 (aq)
  4. MgCl2 (aq) + (NH4)3PO4 (aq)