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**Year 10 Chemistry Extension End of Unit Test.**

**Multiple Choice Question Paper. Please do NOT mark this paper.**

1. What is the total number of atoms represented by the formula (NH4)3PO4?

(a) 20

(b) 18

(c) 17

(d) 4

2. How many protons and how many neutrons does a chlorine-37 nucleus contain?

Protons Neutrons

(a) 17 37

(b) 17 20

(c) 37 20

(d) 20 17

3. In potassium fluoride, the potassium atom donates an electron and the fluorine atom takes an electron. When the compound potassium fluoride is formed, which of the following are formed?

(a) covalent bonds

(b) ionic bonds

(c) metallic bonds

(d) nuclear bonds

4. Which of the following is a covalent molecular compound?

(a) Fe2O3

(b) NaOH

(c) NF3

(d) CuCl2

5. Carbon has an electron configuration of 2:4 and is in group 14. Carbon bonds covalently with hydrogen to form a molecule called methane. Which is the most likely formula for this molecule?

(a) CH4

(b) CH2

(c) CH6

(d) CH14

6. Which of the following formula is **incorrect**?

(a) K2NO3

(b) AgCl

(c) Na3PO4

(d) Fe(CH3COO)3

7. Which of the following elements is found in all acids?

(a) sulphur

(b) oxygen

(c) hydrogen

(d) chlorine.

8. Sodium has 11 electrons. Its electron configuration is:

(a) 11.

(b) 2:8:1.

(c) 2:7:2

(d) 2:8:3

9. Bonds that form between a metal and a non-metal are called:

(a) metallic bonds

(b) ionic bonds

(c) covalent bonds

(d) james bonds

10. Nitrogen is in period 2, group15. Which of the following elements would have properties most similar to nitrogen?

(a) Phosphorous.

(b) Oxygen.

(c) Neon.

(d) Sodium.

11. The sulfide ion, S -2 contains 16 protons. It therefore contains:

(a) 2 electrons.

(b) 8 electrons.

(c) 18 electrons.

(d) 16 electrons.

12. An atom has a mass number of 19. It may consist of:

(a) 9 protons, 10 neutrons and 9 electrons.

(b) 19 protons, 19 neutrons and 19 electrons.

(c) 9 protons, 9 neutrons and 10 electrons.

(d) 10 protons, 9 neutrons and 9 electrons.

13. Chlorine gets a full outer energy level by

(a) losing electron(s)

(b) gaining electron(s)

(c) sharing electron(s)

(d) none of the above.

14. Which of the following statements is correct?

(a) Atoms from group 17 on the periodic table share electrons with atoms from group 1 to form a covalent bond.

(b) Atoms with nearly empty outer energy levels tend to share valence electrons so as to get a full outer energy level.

(c) Substances with covalent bonds have more electrons and are harder to melt.

(d) Atoms with nearly full outer energy levels can share valence electrons with other similar atoms to gain a full outer energy level.

15. Which of the following is the correct electron configuration for the **ion** Al 3+

(a) 2:3

(b) 2:5

(c) 2:8

(d) 2:8:3

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**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Year 10 Chemistry Extension End of Unit Test.**

**Answer Booklet**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1** | a | b | c | d |
| **2** | a | b | c | d |
| **3** | a | b | c | d |
| **4** | a | b | c | d |
| **5** | a | b | c | d |
| **6** | a | b | c | d |
| **7** | a | b | c | d |
| **8** | a | b | c | d |
| **9** | a | b | c | d |
| **10** | a | b | c | d |
| **11** | a | b | c | d |
| **12** | a | b | c | d |
| **13** | a | b | c | d |
| **14** | a | b | c | d |
| **15** | a | b | c | d |

1. Draw the electron dot diagram showing the bond for N2. (2 marks)

2. Give the name or chemical formula for the following. (4 marks)

* 1. calcium bromide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. FePO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  3. sodium sulfite \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  4. Mg (NO3)2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Balance the following equations. (4 marks)

1. Mg + O2 MgO
2. ZrO2 + C + Br2  ZrBr2 + CO
3. Al + Cl2  AlCl3
4. Zn + Cl2 H2 + ZnCl2

4. Below are general equations showing reactions between chemicals. (10 marks)

*1) Acid + Metal hydroxide produces a salt + water.*

*2)* *Acid + metal oxide produces a salt and water*.

*3*) *Acid + Carbonate produces a salt + water + carbon dioxide*

*4) Acid and Hydrogen carbonate produces salt + water + carbon dioxide.*

*5) An acid and a metal produce a salt and hydrogen gas*

Write a **word equation** and then a **balanced equation** using formulae for the following.

(a) Magnesium and sulphuric acid producing hydrogen gas and magnesium sulfate.

Word \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Balanced equation.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(b) Nitric acid and sodium hydroxide

Word \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Balanced equation.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(c) Sulfuric acid and copper (ll) oxide

Word \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Balanced equation.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(d) Phosphoric acid and potassium hydroxide producing potassium phosphate and water.

Word \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Balanced equation.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(e) Hydrochloric acid and magnesium carbonate

Word \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Balanced equation.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(f) ethanoic acid and potassium carbonate.

Word \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Balanced equation.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Below is solubility table.

|  |  |  |
| --- | --- | --- |
| Type of compound | Solubilty | Exceptions |
| Nitrates NO3- | Soluble | None |
| Chlorides Cl-  Bromides Br-  Iodide I- | Soluble | Ag+, Hg+, Pb+ |
| Sulfates SO4-2 | Soluble | Ca2+, Ba2+,Pb2+, Ag+ |
| Carbonates CO3-2 | Insoluble | Li+, Na+, K+, NH3+ |
| Phosphates PO4-3 | Insoluble | Li+, Na+, K+, NH3+ |

Use the table to work out if a precipitate would be formed when the following solutions are mixed.

(a) sodium chloride and lead (ll) nitrate forming lead (ll) chloride and sodium nitrate.

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(b) barium nitrate and potassium sulfate

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(c) lead (ll) nitrate and sodium iodide

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