

## Year 10 Chemistry Exam June 2012

Answer the multiple choice questions on the multiple choice sheet provided

1. The table below shows details of several particles.

Atomic number	Mass number	Number of neutrons	Number of electrons	Overall charge
W	39	19	Y	+2
15	31	X	17	Z

The numbers needed to complete the table in the order W, X, Y, Z are

- a) 20, 16, 18, and -2.
- b) 20, 16, 22, and +2.
- c) 21, 15, 17, and 0.
- d) 20, 17, 18, and -2.

2. An atom with the electronic configuration 2, 8, 6 would be expected to form an ionic charge of

- a) +2.
- b) -2.
- c) +6.
- c) -6.

3. Moving down Group VII (17) in the Periodic Table, which property would be expected to decrease?

- a) The reactivity.
- b) The number of outer-shell electrons in each atom.
- c) The size of atoms.
- d) The melting point.

4. Which of the following statements concerning the Group VIII (18) elements in the Periodic Table is **incorrect**?

- a) They are called the noble or inert gases.
- b) They are very stable and rarely react.
- c) They are also known as Group 18.
- d) They all contain eight electrons in their outer shells

5. An ionic bond is most likely to form between which two elements?

- a) P and O
- b) C and F
- c) Li and Ne
- d) Be and Br

6. How many electrons are involved in a double covalent bond?

- a) 1
- b) 2
- c) 3
- d) 4

7. Which of the following molecular compounds contains a double covalent bond?

- a)  $O_2$
- b)  $N_2$
- c)  $H_2O$
- d)  $HCl$

8. Which element is most likely to form a covalent compound?

- a) C
- b) Cs
- c) Cr
- d) Ca

10. A combustion reaction

- a) always has carbon dioxide as a product.
- b) always has water as a product.
- c) always has oxygen as a reactant.
- d) is always endothermic.

12. A precipitate

- a) may form when two clear solutions are mixed.
- b) is a soluble salt.
- c) forms because the ions in a solution repel each other.
- d) collects at the surface when two solutions are mixed.

14. When solutions of sodium chloride ( $NaCl$ ) and silver nitrate ( $AgNO_3$ ) are mixed, solid silver chloride ( $AgCl$ ) forms. Which ions remain dissolved in the solution?

- a)  $Na^+$  and  $Cl^-$ .
- b)  $Ag^+$  and  $Cl^-$ .
- c)  $Na^+$  and  $NO_3^-$ .
- d)  $Ag^+$  and  $NO_3^-$ .

16. Which one of the following salts is **insoluble** in water?

- a)  $Na_2SO_4$
- b)  $K_2CO_3$
- c)  $(NH_4)_3PO_4$
- d)  $BaSO_4$

### Short Answer Questions

#### Answer in the spaces provided

1. In a neutral atom, which two particles

a) are present in equal numbers?

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b) have approximately the same mass?

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c) have equal but opposite charges?

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3 marks

2. Draw a labelled diagram for an ion of the following elements.

a) Calcium ion

1 mark

3. State **four** observations that you could observe during a practical lesson that proves that a chemical reaction has occurred.

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2 marks

4. Give the chemical symbol for an element that is in the

a) same group as the alkaline earth metals. \_\_\_\_\_

b) same period as the transition metal cobalt. \_\_\_\_\_

1 mark

5. What information does the group the element is in the periodic table tell you about the electronic configuration?

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1 mark

6. For the ionic substance,  $\text{Mg}(\text{OH})_2$

a) Write the symbols for the ions that make up this substance?

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b) How many of each type of ion is present in  $\text{Mg}(\text{OH})_2$ ?

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2 + 1 = 3 marks

7. Chlorine exists in nature as a diatomic molecule,  $\text{Cl}_2$ .

a. What type of bond holds the chlorine atoms together?

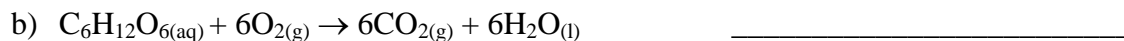
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b. Draw an appropriate electron dot diagram to show how all the valence electrons are arranged around the two chlorine atoms

1 + 2 = 3 marks

8. Use any of the terms in the list below to label each of the reactions shown in (a) to (d).

*decomposition, precipitation, displacement, combustion, neutralisation*



4 marks

10. When two clear aqueous solutions,  $\text{BaCl}_2$  and  $\text{Na}_2\text{SO}_4$ , are mixed a white solid forms.

a) What is the solvent for this reaction?

\_\_\_\_\_

b) What is the chemical formula of the solid that formed in this reaction?

\_\_\_\_\_

2 marks

11. When an aqueous solution of lead nitrate is mixed with an aqueous solution of potassium chloride a precipitate is formed.

a) write a word equation for this reaction

\_\_\_\_\_

b) write a balanced chemical equation including states

\_\_\_\_\_

1 + 2 = 3 marks

12. Name the salt produced when

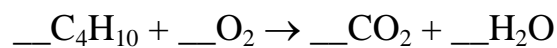
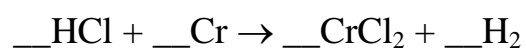
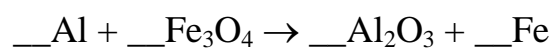
a) hydrochloric acid ( $\text{HCl}$ ) reacts with magnesium ( $\text{Mg}$ ). \_\_\_\_\_

b) nitric acid ( $\text{HNO}_3$ ) reacts with barium carbonate ( $\text{BaCO}_3$ ). \_\_\_\_\_

c) sulfuric acid ( $\text{H}_2\text{SO}_4$ ) reacts with iron(II) oxide ( $\text{FeO}$ ). \_\_\_\_\_

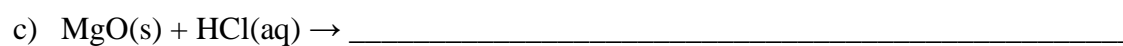
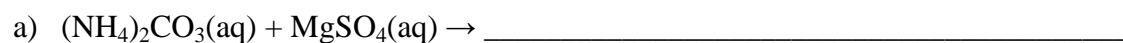
3 marks

13. Balance the following equations



3 marks

14. Complete and balance the following equations



3 marks