Surname	Initial(s)
Signature	

Paper Reference(s

5007 5035

### **Edexcel GCSE**

**Science (5007)** 

Chemistry (5035)

Cla – Topics 5 and 6

### Foundation and Higher Tier

Friday 12 November 2010 – Afternoon

Time: 20 minutes

Materials required for examination

Items included with question papers

Multiple Choice Answer Sheet HB pencil, eraser and calculator

#### **Instructions to Candidates**

Use an HB pencil. Do not open this booklet until you are told to do so. Mark your answers on the separate answer sheet.

**Foundation tier candidates:** answer questions 1-24. **Higher tier candidates:** answer questions 17-40. All candidates are to answer questions 17-24.

#### Before the test begins:

Check that the answer sheet is for the correct test and that it contains your candidate details.

#### How to answer the test:

For each question, choose the right answer, A, B, C or D and mark it in HB pencil on the answer sheet. For example, the answer C would be marked as shown.



Mark only **one** answer for each question. If you change your mind about an answer, rub out the first mark **thoroughly**, then mark your new answer.

Do any necessary calculations and rough work in this booklet. You may use a calculator if you wish.

You must not take this booklet or the answer sheet out of the examination room.

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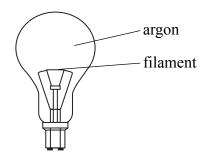
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## Questions 1 to 16 must be answered by Foundation tier candidates only. Higher tier candidates start at question 17.

#### Noble gases

1. Argon is a noble gas.

Electric light bulbs are filled with argon to prevent the hot filament from burning.



Argon is used because it is

- A unreactive
  B a coloured gas
  C denser than air
  D flammable
- **2.** The symbol for an atom of argon is
  - A aR
  - B Ar C AR
  - **D** ar
- **3.** Helium and neon are noble gases. They have similar chemical properties. Helium and neon
  - **A** form compounds
  - B react with oxygen
  - C are in the same group in the periodic table
  - **D** react with each other

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4. Which letter shows the position of a noble gas in the periodic table?

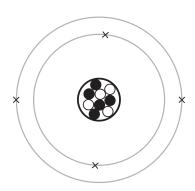
1	2						3	4	5	6	7	0
			A									
											В	
C												D

- 5. An atom of helium contains two protons, two neutrons and two electrons. The atomic number of helium is
  - **A** 2
  - **B** 3
  - **C** 4
  - **D** 6

#### Metals

6. Beryllium is a metal.

The diagram shows the positions of electrons, neutrons and protons in an atom of beryllium.



Turn over

In the diagram, × shows the position of

- A an electron
- **B** a neutron
- C a nucleus
- **D** a proton
- 7. The part of an atom which contains protons and neutrons is the
  - A core
  - **B** nucleus
  - C shell
  - **D** molecule

**8.** Magnesium is a metal.

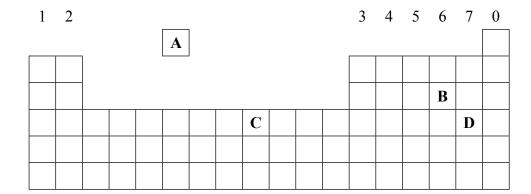
Heat is given out when magnesium reacts with dilute hydrochloric acid.

This means the reaction is

- **A** a thermal decomposition
- **B** endothermic
- **C** explosive
- **D** exothermic
- 9. When magnesium reacts with dilute hydrochloric acid, hydrogen is produced. A test for hydrogen is that it
  - A relights a glowing splint
  - **B** turns universal indicator red
  - C turns universal indicator blue
  - **D** pops when mixed with air and lit
- 10. Gold is used to make rings and other jewellery because it
  - **A** has a low cost
  - **B** is light in weight
  - **C** remains shiny for many years
  - **D** does not conduct electricity
- 11. A piece of iron which has been buried in the ground is found covered in a red-brown deposit of rust.

To form the rust, the iron has undergone a

- A slow, chemical change
- **B** fast, chemical change
- C slow, physical change
- **D** fast, physical change
- 12. Which letter shows the position of a metal in the periodic table?



#### **Common salt**

Common salt is sodium chloride.

**13.** Common salt can be extracted from the Earth.

This common salt is

- A artificialB naturalC man-madeD an element
- **14.** Dilute hydrochloric acid reacts with sodium hydroxide solution to form sodium chloride and water.

This reaction is an example of

- A hydrationB oxidationC neutralisationD precipitation
- **15.** Salt is often added to crisps.

The salt

- A makes the crisps more healthy to eat
- **B** adds flavour to the crisps
- C adds colour to the crisps
- **D** makes the crisps softer
- **16.** A flame test can be used to identify sodium compounds.

The colour produced in the flame is

- A blue
- **B** yellow
- C green
- **D** red

#### Higher tier candidates start at question 17 and answer questions 17 to 40. Questions 17 to 24 must be answered by all candidates: Foundation tier and Higher tier.

#### **Everyday metals**

17. Iron is an important metal.

Most iron is found in the Earth's crust as

A the metalB alloysC steelD ores

18. When copper is heated in air it reacts to form copper oxide.

 $copper + oxygen \rightarrow copper oxide$ 

In this reaction copper is

A reduced
B hydrated
C oxidised

**D** thermally decomposed

19. Zinc oxide can be converted to zinc by heating the zinc oxide with

A copper
B oxygen
C carbon dioxide
D carbon

**20.** Lead oxide can be converted to lead by heating it in hydrogen.

lead oxide + hydrogen  $\rightarrow$  lead + water

In this reaction the lead oxide is

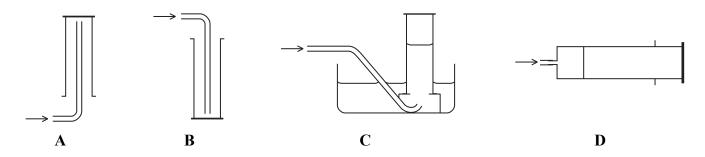
A dehydratedB hydratedC reducedD oxidised

#### **Baking powder**

- 21. The main ingredient in baking powder is a sodium compound. This sodium compound is
  - **A** sodium hydroxide
  - **B** sodium carbonate
  - C sodium oxide
  - **D** sodium hydrogencarbonate
- **22.** When baking powder is used, the sodium compound reacts with an acidic substance to produce carbon dioxide.

In this reaction the acidic substance is

- **A** thermally decomposed
- **B** neutralised
- C hydrated
- **D** dehydrated
- 23. The test to prove that a gas is carbon dioxide is that it
  - **A** puts out a glowing splint
  - **B** relights a glowing splint
  - C turns moist blue litmus paper red
  - **D** turns limewater milky
- 24. Carbon dioxide is denser than air and slightly soluble in water.
  Which apparatus could **not** be used to collect carbon dioxide free from air?



**TOTAL FOR FOUNDATION TIER PAPER: 24 MARKS** 

Foundation tier candidates do not answer any more questions after question 24.

# Questions 25 to 40 must be answered by Higher tier candidates only. Foundation tier candidates do not answer questions 25 to 40.

#### The periodic table

In the periodic table below, letters are used to show the positions of some elements. The letters are not the symbols of atoms of the elements.

1	2							3	4	5	6	7	0
L				ı				M				P	
R		S								Т			W
						V							
X			Y								Z		

- 25. Which letter shows the position of a transition metal in period 5 of the periodic table?
  - A V
  - **B** T
  - C X
  - **D** Y
- **26.** Which letter shows the position of an alkali metal that is more reactive than potassium?
  - **A** L
  - B S
  - $\mathbf{C}$  X
  - D Y
- 27. Which letter shows the position of the element with atomic number 3?
  - A L
  - $\mathbf{B}$  M
  - C R
  - $\mathbf{D}$  S
- **28.** Which letter shows the position of an element with chemical properties similar to bromine?
  - A P
  - **B** T
  - C W
  - $\mathbf{D}$

#### Halogens

29. In which of these mixtures would a displacement reaction occur?

A chlorine and potassium fluoride solution

**B** iodine and potassium chloride solution

C iodine and potassium bromide solution

**D** chlorine and potassium iodide solution

**30.** Which row of the table describes fluorine and iodine at room temperature?

	fluorine	iodine
A	yellow-green gas	grey solid
В	pale yellow gas	purple solid
С	pale yellow gas	grey solid
D	yellow-green gas	purple gas

**31.** Which of the following statements about the halogens are correct?

1 their reactivity increases as their atomic numbers increase

their boiling points decrease as their atomic numbers increase

**A** 1 only

**B** 2 only

C both 1 and 2

**D** neither 1 nor 2

**32.** Chlorine reacts with calcium bromide solution.

The equation for the reaction is

A Cl + CaBr  $\rightarrow$  CaCl + Br

 $\mathbf{B} \qquad \qquad \text{Cl}_2 \; + \; \text{CaBr}_2 \rightarrow \; \text{CaCl}_2 + \; \text{Br}_2$ 

C  $2Cl + CaBr_2 \rightarrow CaCl_2 + 2Br$ 

 $\mathbf{D} \qquad \qquad \operatorname{Cl}_2 + 2\operatorname{CaBr} \rightarrow 2\operatorname{CaCl} + \operatorname{Br}_2$ 

#### Salts

- 33. Sodium hydroxide solution was added to a solution of a salt. A red-brown precipitate was formed. The formula of the precipitate is
  - $\mathbf{A}$  Fe(OH)<sub>2</sub>
  - **B**  $Cu(OH)_2$
  - $\mathbf{C}$  Zn(OH)<sub>2</sub>
  - **D** Fe(OH) $_3$
- **34.** The salt calcium iodate contains the elements
  - **A** calcium and iodine only
  - **B** calcium and iron only
  - C calcium, iodine and oxygen
  - **D** calcium, iron and oxygen
- **35.** Which of these substances will react together safely to produce a salt?
  - A potassium and dilute sulphuric acid
  - **B** potassium and ammonia solution
  - C dilute sulphuric acid and ammonia solution
  - **D** potassium chloride and dilute hydrochloric acid
- **36.** Lead sulphate is an insoluble salt.

It can be prepared by precipitation.

The best way to produce a pure sample of lead sulphate is to

- A add excess lead carbonate to dilute sulphuric acid
- **B** add excess lead oxide to dilute sulphuric acid
- C add lead nitrate solution to dilute sulphuric acid
- **D** add excess lead to dilute sulphuric acid

#### Metals

37. Sodium reacts with water.

The equation for this reaction is

**A** Na + 
$$H_2O \rightarrow NaOH + H$$

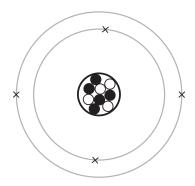
$$\mathbf{B} \qquad 2\mathrm{Na} + 2\mathrm{H}_2\mathrm{O} \rightarrow 2\mathrm{NaOH} + \mathrm{H}_2$$

C 
$$2Na + H_2O \rightarrow Na_2O + H_2$$

$$\mathbf{D} \qquad \qquad \text{Na} + \ \text{H}_2\text{O} \rightarrow \ \text{NaO} \ + \text{H}_2$$

**38.** Beryllium is a metal.

The diagram shows the positions of electrons, neutrons and protons in an atom of beryllium.



How many neutrons are in this atom?

- **A** 4
- **B** 5
- C 9
- **D** 13

Turn over

#### **Useful products**

- **39.** Which of the following statements about ammonia are correct?
  - 1 ammonia is used to manufacture nitric acid
  - 2 ammonia turns moist red litmus paper blue
  - **A** 1 only
  - B 2 only
  - C both 1 and 2
  - **D** neither 1 nor 2
- **40.** The equation represents the reaction that takes place when copper carbonate is heated.

$$CuCO_3 \rightarrow CuO + CO_2$$

Which of these statements about the reaction are correct?

- 1 the reaction is an example of thermal decomposition
- during the reaction the copper carbonate is oxidised to copper oxide
- **A** 1 only
- **B** 2 only
- C both 1 and 2
- **D** neither 1 nor 2

**TOTAL FOR HIGHER TIER PAPER: 24 MARKS** 

**END**