

Surname	Initial(s)
Signature	

Paper Reference(s)

**5007 5035**

# **Edexcel GCSE**

## **Science (5007)**

## **Chemistry (5035)**

### **C1a – Topics 5 and 6**

### **Foundation and Higher Tier**

**Friday 4 March 2011 – Morning**

**Time: 20 minutes**

**Materials required for examination**

Multiple Choice Answer Sheet  
HB pencil, eraser and calculator

**Items included with question papers**

Nil

#### **Instructions to Candidates**

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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.

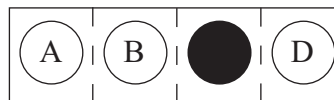
#### **Before the test begins:**

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

### **Neon**

Neon is an element.

It does not combine with any other elements to form compounds.

1. Neon is

- A a noble gas
- B a halogen
- C an alkali metal
- D a transition metal

2. The symbol for an atom of neon is

- A N
- B ne
- C Ne
- D NE

3. Helium is an element which is in the same group of the periodic table as neon.  
Helium

- A reacts with oxygen
- B forms compounds
- C does not combine with any other elements
- D reacts vigorously with water

## Chlorine

4. Chlorine is a toxic gas.  
Which of these hazard symbols on a cylinder of chlorine shows that chlorine is toxic?



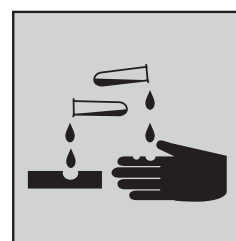
A



B



C



D

5. What is used to test for chlorine?

- A a glowing splint
- B a lighted splint
- C damp blue litmus paper
- D limewater

6. What is the colour of chlorine gas?

- A purple
- B yellow-green
- C grey
- D red-brown

## Metals from the Earth

7. Magnesium is a reactive metal.  
It is usually found in the Earth's crust as

- A an ore
- B a liquid
- C the pure metal
- D an alloy

8. Magnesium reacts with oxygen to form magnesium oxide.  
In this reaction the magnesium is

- A neutralised
- B oxidised
- C reduced
- D thermally decomposed

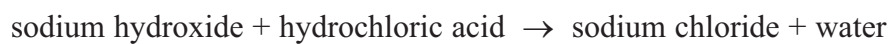
9. Iron occurs naturally as its oxide.  
Which substance can be used to obtain iron from its oxide?
- A carbon
  - B sodium hydroxide
  - C copper
  - D water

### Sodium chloride

10. The formula of sodium chloride is

- A  $\text{Na}_2\text{Cl}$
- B  $\text{NaCl}_2$
- C  $\text{NaCl}$
- D  $\text{Na}_2\text{Cl}_2$

11. Sodium chloride can be formed by the reaction



This reaction is an example of

- A hydration
  - B neutralisation
  - C oxidation
  - D thermal decomposition
12. Sodium chloride is used
- A as a fertiliser
  - B to clean drains
  - C in fire extinguishers
  - D to flavour food

## Cakes

These ingredients are used to make some cakes

butter  
sugar  
eggs  
vanilla extract  
flour  
baking powder  
milk  
salt

13. Artificial vanilla flavouring is often used instead of vanilla extract.  
Artificial means

- A man-made
- B pure
- C obtained from plants
- D has no taste

14. Baking powder is a mixture of

- A sodium carbonate and an acidic substance
- B sodium carbonate and an alkaline substance
- C sodium hydrogencarbonate and an acidic substance
- D sodium hydrogencarbonate and an alkaline substance

15. The purpose of the baking powder is to allow the cakes to

- A taste sweet
- B stay fresh for longer
- C rise
- D become more dense

16. All cooking processes involve a

- A chemical change
- B physical change
- C neutralisation reaction
- D thermal decomposition reaction

**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.**

**Practical chemistry**

- 17.** Copper oxide is a black powder.  
Copper sulphate is a blue, crystalline solid which is soluble in water.  
When copper oxide is reacted with dilute sulphuric acid, copper sulphate solution is formed.  
What would you see during this reaction?
- A** bubbles of gas
  - B** the liquid turning blue
  - C** a blue precipitate
  - D** a black solid forming
- 18.** A few drops of sodium hydroxide solution were added to a solution of a salt.  
A red-brown precipitate was seen.  
This salt must be a salt of
- A** iron
  - B** copper
  - C** zinc
  - D** sodium

## Periodic table

Use the following information to answer questions 19 to 21.

The positions of five elements in the periodic table are shown by the letters P, Q, R, S and T. The letters shown are not the symbols of atoms of the elements.

1		2												3	4	5	6	7	0		
														S	T						
P	Q																				
								R													

19. Elements in the periodic table are placed in order of increasing

- A relative atomic mass
- B atomic number
- C year of discovery
- D number of neutrons per atom

20. Elements can be metals or non-metals. Which statement is correct?

- A T is a metal and S is a non-metal
- B S is a metal and T is a non-metal
- C P is a metal and Q is a non-metal
- D Q is a metal and S is a non-metal

21. Which letter shows the position of a transition metal?

- A P
- B Q
- C R
- D S

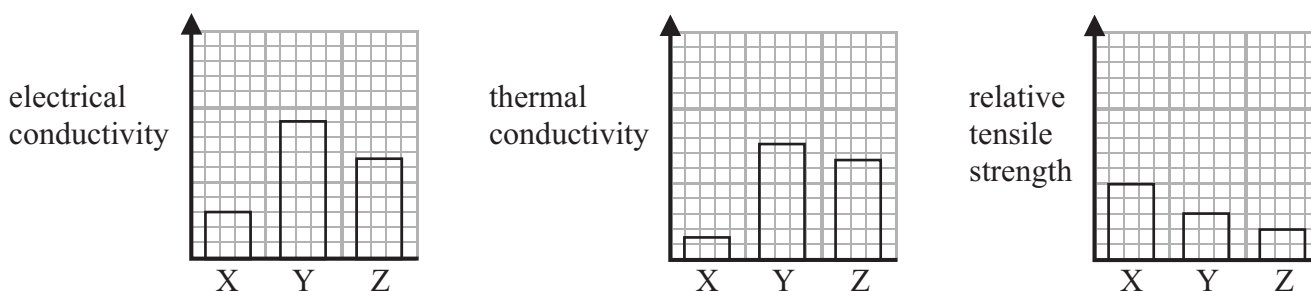
22. An atom of copper contains 29 electrons, 29 protons and 35 neutrons. The atomic number of copper is

- A 29
- B 35
- C 58
- D 64

23. Which row of the table shows the correct charges on a proton, an electron and a neutron?

	proton	electron	neutron
A	+1	0	-1
B	0	-1	+1
C	-1	+1	0
D	+1	-1	0

24. The charts show the relative tensile strength, thermal conductivity and electrical conductivity of three metals, X, Y and Z.



Which row of the table shows the best metal to use to make electrical wires and the best metal to use to make bridges.

	electrical wiring	bridges
A	Y	Z
B	Z	Y
C	Y	X
D	Z	X

**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.**

### Reactions

25. The equation for the reaction occurring when sodium hydrogencarbonate is heated is



This reaction is an example of

- A hydration
- B oxidation
- C neutralisation
- D thermal decomposition

*Use the following information to answer questions 26 and 27.*

Calcium oxide reacts with dilute hydrochloric acid to produce the soluble salt, calcium chloride.

26. The balanced equation for the reaction is

- A  $\text{CaO}_2 + 2\text{HCl} \rightarrow \text{CaCl}_2 + 2\text{H}_2\text{O}$
- B  $\text{CaO} + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2\text{O}$
- C  $\text{Ca}_2\text{O} + 2\text{HCl} \rightarrow 2\text{CaCl} + \text{H}_2\text{O}$
- D  $\text{CaO} + \text{HCl} \rightarrow \text{CaCl} + \text{H}_2\text{O}$

27. Which of the following statements about the reaction are correct?

- 1 there is a reduction reaction taking place
- 2 the reaction will produce a white precipitate

- A 1 only
- B 2 only
- C both 1 and 2
- D neither 1 nor 2

## Trends and patterns

Use the following information to answer questions 28 and 29.

The positions of six elements in the periodic table are shown by the letters E, F, G, H, J and K. The letters shown are not the symbols of atoms of the elements.

1	2												3	4	5	6	7	0
E	F												G				H	K
																	J	

28. Which pair of letters show the position of two elements with the most similar properties?
- A E and F  
 B F and G  
 C H and J  
 D H and K
29. Which letter shows the position of a halogen in period 3?
- A G  
 B H  
 C J  
 D K
30. When the reagents are mixed together, which of the following results in a displacement reaction?
- A bromine and potassium chloride solution  
 B bromine and potassium fluoride solution  
 C chlorine and potassium bromide solution  
 D chlorine and potassium fluoride solution
31. Which row of the table shows the correct colour and state of the named halogen at room temperature?

	halogen	colour at room temperature	state at room temperature
A	iodine	grey	solid
B	bromine	red-brown	solid
C	iodine	purple	solid
D	bromine	red-brown	gas

32. The table shows the atomic numbers of the first five alkali metals.

name of metal	atomic number
lithium	3
sodium	11
potassium	19
rubidium	37
caesium	55

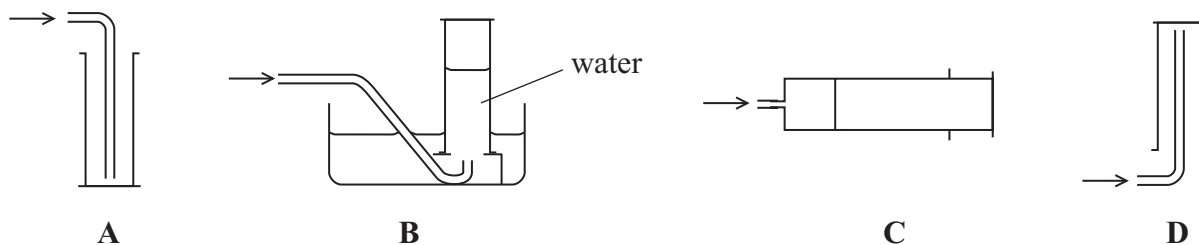
Which of these statements about the alkali metals are correct?

- 1 lithium is more reactive than sodium
- 2 the reaction of potassium with water is exothermic

- A** 1 only  
**B** 2 only  
**C** both 1 and 2  
**D** neither 1 nor 2
33. When lithium reacts with water, it produces lithium hydroxide and hydrogen. The balanced equation for this reaction is

- A**  $\text{Li} + \text{H}_2\text{O} \rightarrow \text{LiOH} + \text{H}$   
**B**  $\text{Li} + 2\text{H}_2\text{O} \rightarrow \text{Li}(\text{OH})_2 + \text{H}_2$   
**C**  $2\text{Li} + 2\text{H}_2\text{O} \rightarrow 2\text{LiOH} + \text{H}_2$   
**D**  $2\text{Li} + \text{H}_2\text{O} \rightarrow \text{Li}_2\text{O} + \text{H}_2$




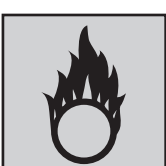
34. Hydrogen is insoluble in water.  
Hydrogen is less dense than air.  
Which set of apparatus could **not** be used to collect hydrogen gas?



35. Which row of the table shows the correct test for hydrogen and the result of the test when a small amount of air is present?

	test	result of test
A	glowing splint	squeaky pop
B	glowing splint	splint relights
C	lighted splint	squeaky pop
D	lighted splint	splint relights

36. Which row of the table shows a hazard symbol with the correct name and description of the hazard?

	hazard symbol	name of hazard	description of hazard
A		flammable	provides oxygen for other substances to burn
B		oxidising	these substances catch fire easily
C		oxidising	provides oxygen for other substances to burn
D		flammable	these substances catch fire easily

### Metals and their salts

37. Copper sulphate is a soluble salt.  
It can be made by reacting copper oxide with dilute sulphuric acid.  
The products of the reaction are
- A copper sulphate only
  - B copper sulphate and water
  - C copper sulphate and hydrogen only
  - D copper sulphate, hydrogen and oxygen
38. Barium sulphate is an insoluble salt.  
It is prepared as a precipitate by mixing solutions of two soluble salts.  
What is the order of steps to obtain pure, dry barium sulphate from this mixture?

**first step**  $\longrightarrow$  **last step**

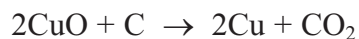
- |   |                        |                        |                        |
|---|------------------------|------------------------|------------------------|
| A | wash precipitate       | filter off precipitate | dry in oven            |
| B | dry in oven            | wash precipitate       | filter off precipitate |
| C | filter off precipitate | dry in oven            | wash precipitate       |
| D | filter off precipitate | wash precipitate       | dry in oven            |

39. Two tests that show the presence of copper in a compound are  
a flame test on the solid  
the addition of sodium hydroxide solution to a solution of the copper compound.

Which row of the table shows the results of these tests?

	the colour of the flame in the flame test	colour of precipitate when sodium hydroxide solution is added
A	pale green	pale blue
B	pale green	dark green
C	green-blue	dark green
D	green-blue	pale blue

40. Copper can be obtained from its oxide by heating the oxide with carbon.  
The overall equation for the reaction is



Which of the following statements about this reaction are correct?

- 1 copper oxide is reduced
- 2 carbon is oxidised

- A 1 only  
B 2 only  
C both 1 and 2  
D neither 1 nor 2

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

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