

Surname	Initial(s)
Signature	

Paper Reference(s)

5007 5035

Edexcel GCSE

Science (5007)

Chemistry (5035)

C1a – Topics 5 and 6

Foundation and Higher Tier

Tuesday 15 November 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

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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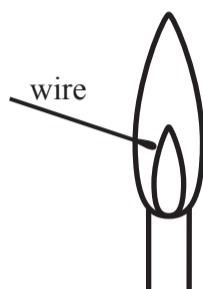
Turn over

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

Sodium chloride

1. A chemist was carrying out an experiment on solid sodium chloride. He heated a wire, dipped the wire into concentrated hydrochloric acid and then into the solid. He then put the wire back into the Bunsen flame.



The chemist was carrying out a

- A** flame test
B firework test
C dehydration reaction
D neutralisation reaction
2. When sodium chloride is placed in a Bunsen flame it produces
- A** white sparks
B a small explosion
C a yellow flame
D an orange gas
3. Sodium chloride is a
- A** mixture
B metallic element
C non-metallic element
D salt

4. Sodium chloride can be made by reacting dilute hydrochloric acid with sodium hydroxide solution.
The reaction taking place is
- A hydration
 - B neutralisation
 - C precipitation
 - D dehydration
5. Sodium chloride solution is mixed with silver nitrate solution.
Solid silver chloride is formed as a precipitate.
This change happens because silver chloride
- A has a high melting point
 - B is unreactive
 - C is an insoluble salt
 - D is pale blue
6. The symbol for an atom of sodium is
- A S
 - B So
 - C N
 - D Na
7. Sodium is an alkali metal.
Which letter shows the position of sodium in the periodic table?

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

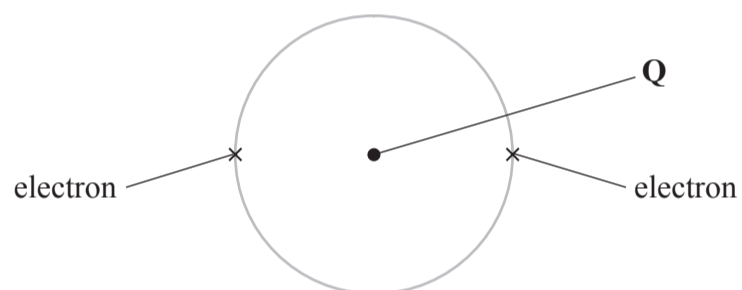
Noble gases

8. Helium is a noble gas.
Helium is less dense than air.



Helium is used to fill balloons because it makes the balloons

- A rise in the air
 - B attractive in appearance
 - C flammable
 - D unlikely to burst
9. The diagram shows a helium atom.



The part of the atom labelled **Q** contains

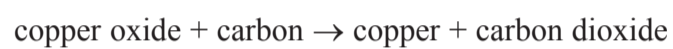
- A protons only
 - B neutrons only
 - C protons and neutrons only
 - D protons, neutrons and electrons
10. Helium and argon are two noble gases.
In the periodic table, helium and argon will be in
- A the same period and the same group
 - B a different period but the same group
 - C the same period but a different group
 - D a different period and a different group
11. The noble gases
- A become less reactive as their atomic number increases
 - B are unreactive compared to other elements
 - C all form stable compounds
 - D react with metals to form unstable compounds

Metals and their compounds

12. Metals can be extracted from rocks found in the Earth's crust.
These rocks are all

A metal oxides
B elements
C pure compounds
D ores

13. Copper can be obtained from copper oxide by heating a mixture of copper oxide and carbon.
The word equation for the reaction is



In this reaction the copper oxide is

- A** oxidised
B thermally decomposed
C reduced
D neutralised
14. John added dilute sulphuric acid to solid magnesium carbonate.
Bubbles of a gas were formed.
The gas was
- A** carbon dioxide
B hydrogen
C oxygen
D sulphur dioxide

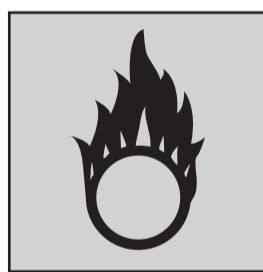
15. Acids are sometimes classified as irritants.
To show this, which hazard symbol should be used on bottles of dilute sulphuric acid?



A



B



C



D

16. Dilute sulphuric acid can be obtained by adding the concentrated acid to water. During this process, heat is given out. This proves that the process is
- A exothermic
 - B hydration
 - C endothermic
 - D neutralisation

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.

Baking cakes

Cakes are usually baked in a hot oven.

17. Which row of the table shows the type of reaction that takes place when a cake is baked and whether new products are formed or not?

	type of reaction	new products are formed
A	physical	yes
B	chemical	yes
C	physical	no
D	chemical	no

18. Cake mixtures sometimes contain sodium hydrogencarbonate. When sodium hydrogencarbonate is heated strongly it forms new products. The reaction that takes place is

- A** dehydration
- B** thermal decomposition
- C** combustion
- D** hydration

19. Baking powder can be a mixture of sodium hydrogencarbonate and tartaric acid. During baking, these substances react to produce carbon dioxide. In this reaction the acid is

- A** thermally decomposed
- B** neutralised
- C** combusted
- D** dehydrated

20. The test to prove that a gas is carbon dioxide is that the gas

- A** puts out a burning splint
- B** turns universal indicator solution red
- C** turns limewater milky
- D** when mixed with air and ignited, burns with a 'pop'

Elements

21. Which of these describes the colour and state at room temperature of a halogen?

- A purple solid
- B red-brown liquid
- C yellow liquid
- D dark green gas

22. The test for chlorine is that chlorine gas

- A turns moist red litmus paper blue
- B displaces fluorine from potassium fluoride solution
- C burns with a green flame
- D turns moist blue litmus paper red then white

23. The table shows the relative reactivity of some metals with water.

metal	relative reactivity with water
caesium	explosive
lithium	slow
potassium	vigorous

Which of these shows the metals in order of increasing atomic number?

- | | lowest atomic number | → | highest atomic number |
|---|----------------------|-----------|-----------------------|
| A | caesium | lithium | potassium |
| B | lithium | potassium | caesium |
| C | lithium | caesium | potassium |
| D | caesium | potassium | lithium |

24. Some wire was reacted with dilute nitric acid.
A solution was formed.
Sodium hydroxide solution was mixed with this solution.
A pale blue precipitate was formed.
This showed that the wire contained

- A iron
- B zinc
- C magnesium
- D copper

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.**

Atoms

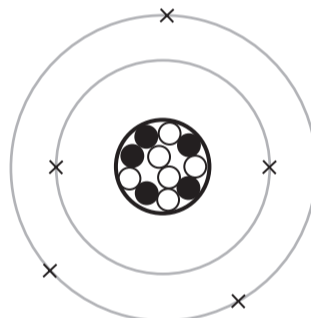
Most atoms contain electrons, protons and neutrons.

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

	charge on		
	proton	neutron	electron
A	no charge	positive	negative
B	negative	no charge	positive
C	positive	negative	no charge
D	positive	no charge	negative

Use this information to answer questions 26 and 27.

The diagram shows the structure of an atom of boron.



26. How many particles are in the nucleus of this atom?

A 3
B 6
C 11
D 16

27. How many protons are in this atom?

A 5
B 6
C 11
D 16

The periodic table

Use this periodic table to answer questions 28 to 31.

The positions of some elements in the periodic table are shown.

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

The letters shown are **not** the symbols of atoms of the elements.

28. Which letter shows the position of a non-metallic element in period 4?

- A P
- B T
- C V
- D X

29. Which letter shows the position of an element that forms salts which produce a lilac flame in a flame test?

- A M
- B R
- C S
- D T

30. Which letter shows the position of an element that forms salts which, when dissolved in water, produce a red-brown precipitate with sodium hydroxide solution?

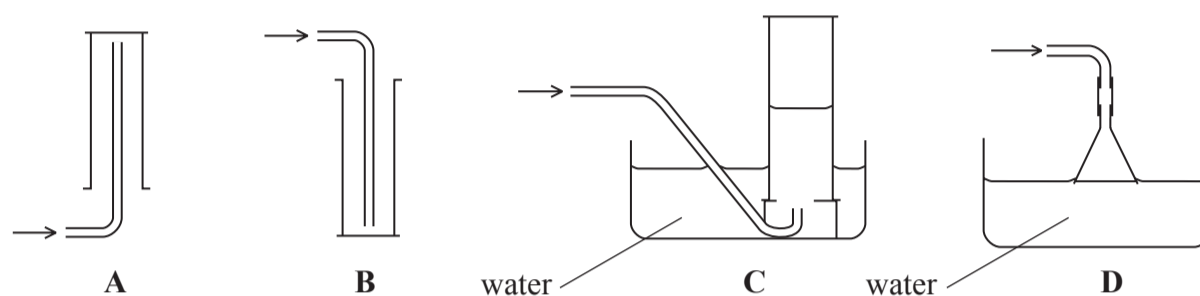
- A R
- B S
- C T
- D V

31. Which letter shows the position of a halogen that is more reactive than bromine?

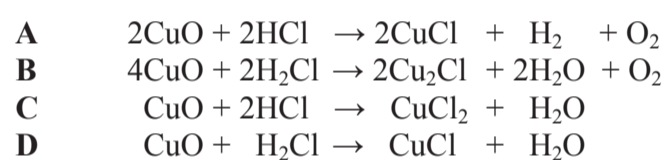
- A P
- B Q
- C R
- D X

Elements and compounds

32. A gas is denser than air.
It is soluble in water.
Which apparatus should be used to collect a sample of this gas?



33. Copper chloride can be prepared by reacting copper oxide, CuO, with dilute hydrochloric acid.
The equation for this reaction is



34. Which of these mixtures will **not** produce a displacement reaction?

- A chlorine and sodium bromide solution
B chlorine and sodium iodide solution
C bromine and sodium iodide solution
D iodine and sodium bromide solution

35. Potassium chlorate is a compound containing the elements

- A potassium, chlorine and carbon
B potassium, chlorine and hydrogen
C potassium, chlorine and oxygen
D potassium and chlorine only

Acids

36. The table suggests two ways in which phosphoric acid might be used. Which row of the table is correct?

	to make fertiliser	in some soft drinks
A	yes	no
B	no	yes
C	yes	yes
D	no	no

37. If concentrated sulphuric acid is added to glucose, $C_6H_{12}O_6$, solid black carbon is formed. In this reaction the glucose is

- A** hydrated
- B** dehydrated
- C** neutralised
- D** reduced

38. Which row of the table shows the reagents that react with dilute hydrochloric acid to form zinc chloride?

	zinc	zinc oxide	zinc carbonate
A	yes	yes	yes
B	yes	yes	no
C	yes	no	yes
D	no	yes	yes

Use this information to answer questions 39 and 40.

Lead sulphate is an insoluble salt.

It can be prepared by reacting a solution of lead nitrate with dilute sulphuric acid.

39. Which of these statements about this preparation of lead sulphate are correct?

- 1 the reaction taking place involves the reduction of lead nitrate
- 2 pure, dry lead sulphate is obtained from the resulting mixture by evaporation

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

40. The equation for this reaction is

- A** $\text{PbNO}_3 + \text{HSO}_4 \rightarrow \text{PbSO}_4 + \text{HNO}_3$
- B** $\text{PbNO}_3 + \text{H}_2\text{SO}_4 \rightarrow \text{PbSO}_4 + \text{H}_2\text{NO}_3$
- C** $\text{Pb}(\text{NO}_3)_2 + \text{H}_2\text{SO}_4 \rightarrow \text{PbSO}_4 + 2\text{HNO}_3$
- D** $\text{Pb}_2\text{NO}_3 + 2\text{HSO}_4 \rightarrow 2\text{PbSO}_4 + \text{H}_2\text{NO}_3$

TOTAL FOR HIGHER TIER PAPER: 24 MARKS

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