

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 17 June 2011 – Afternoon

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

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

Hydrogen

1. Which of these hazard symbols is used to show that hydrogen is flammable?



A



B



C

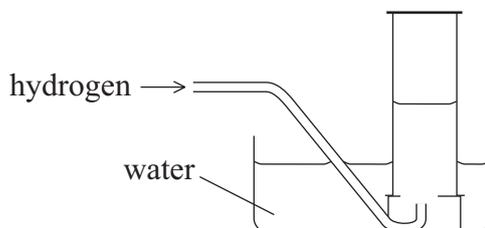


D

2. When potassium reacts with water, hydrogen is produced.
During the reaction heat is given out.
The reaction is

- A a thermal decomposition
- B endothermic
- C exothermic
- D a neutralisation

3. Hydrogen is often collected using this apparatus.

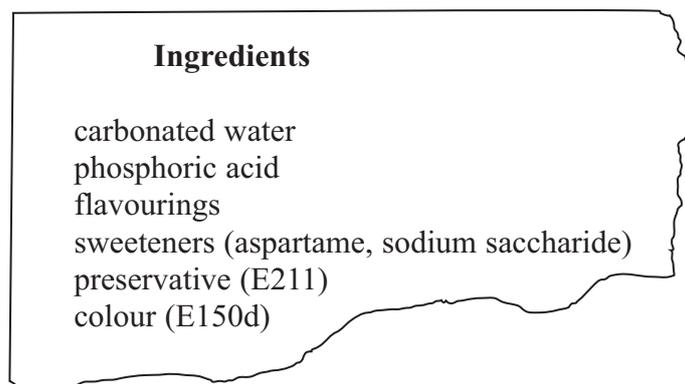


This method is known as collecting the gas

- A under water
 - B over water
 - C by downward delivery
 - D by upward delivery
4. A mixture of hydrogen and air explodes if it is ignited.
This explosion is the result of
- A a slow physical change
 - B a fast physical change
 - C a slow chemical reaction
 - D a fast chemical reaction

Cola

This is part of the label from a bottle containing cola.



5. E211 has the formula $\text{NaC}_6\text{H}_5\text{CO}_2$.
E211 contains atoms of the element
- A carbohydrate
 - B nitrogen
 - C hydrogen
 - D cobalt
6. The cola contains artificial sweeteners.
Artificial means
- A less sweet than sugar
 - B obtained from plants
 - C man-made
 - D dissolves easily
7. A chemist tests a sample of the sweetener, sodium saccharide, to prove that it is a sodium salt.
To do this the chemist should use
- A a flame test
 - B nitric acid
 - C universal indicator solution
 - D sodium hydroxide solution
8. Warming the cola causes a gas to be released.
This gas turns limewater milky.
The gas is
- A oxygen
 - B carbon dioxide
 - C nitrogen
 - D steam

9. The cola contains phosphoric acid.
Another use for phosphoric acid is
- A to make fertilisers
 - B in vinegar
 - C as table salt
 - D to make nitric acid

Metals

10. Most metals are found in the Earth's crust as
- A liquids
 - B alloys
 - C ores
 - D uncombined elements

11. Which letter shows the position of a metal in the periodic table?

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

12. The symbol for an atom of copper is
- A C
 - B Co
 - C Cu
 - D Cp

13. Monica added a reagent to copper nitrate solution.
This produced a blue precipitate.
The reagent was
- A sodium chloride solution
 - B sodium hydroxide solution
 - C water
 - D dilute sulphuric acid

14. Lithium is an alkali metal.
Which letter shows the position of lithium in the periodic table?

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

15. Gold is found as the uncombined metal in the Earth's crust.
Gold is found as the uncombined metal because gold metal is

- A unstable
- B hard
- C heavy
- D unreactive

16. Rubidium and caesium are in the same group of the periodic table.
Rubidium and caesium have

- A very different physical properties and very different chemical reactions
- B the same physical properties but very different chemical reactions
- C different physical properties and similar chemical reactions
- D the same physical properties and similar chemical reactions

**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.**

Carbonates and hydrogencarbonates

17. Baking powder contains
- A sodium carbonate only
 - B sodium hydrogencarbonate only
 - C sodium carbonate and an acidic substance
 - D sodium hydrogencarbonate and an acidic substance
18. When anhydrous magnesium carbonate is heated, a gas is produced.
This reaction is an example of
- A neutralisation
 - B thermal decomposition
 - C oxidation
 - D dehydration
19. When potassium hydrogencarbonate is heated, a gas is produced.
The gas is
- A oxygen
 - B hydrogen
 - C carbon monoxide
 - D carbon dioxide
20. Barium carbonate is an insoluble salt.
Barium carbonate is best prepared by
- A mixing solutions of barium nitrate and potassium carbonate
 - B heating a mixture of barium and potassium carbonate
 - C adding barium oxide to potassium carbonate solution
 - D evaporating a mixture of barium hydroxide and carbonic acid

The halogens

The table gives information about four halogens.

name	atomic number
fluorine	9
chlorine	17
bromine	35
iodine	53

21. The least reactive halogen shown in the table is
- A fluorine
 - B chlorine
 - C bromine
 - D iodine
22. Every bromine atom must
- A contain 35 neutrons
 - B contain 35 protons
 - C contain the same number of electrons as a fluorine atom
 - D have a negative charge
23. The nucleus of an atom of iodine contains
- A protons only
 - B electrons only
 - C protons and neutrons
 - D protons and electrons
24. If chlorine is bubbled into potassium bromide solution, bromine is formed. The reaction taking place is known as
- A displacement
 - B dehydration
 - C neutralisation
 - D thermal decomposition

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.**

Periodic table

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

	1	2										3	4	5	6	7	0
	P	Q														R	
							S						T				U
	V							W									X
	Y																

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

25. Which letter shows the position of an element that is a gas at room temperature and is unreactive?

- A Q
- B S
- C U
- D X

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

- A R
- B T
- C X
- D Y

27. Which letter shows the position of a transition metal in period 4?

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

28. Which letter shows the position of an alkali metal that is less reactive than potassium?

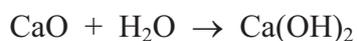
- A P
- B Q
- C S
- D Y

Salts

29. Which row of the table shows reagents that could be added to dilute hydrochloric acid to make magnesium chloride solution?

	magnesium oxide	magnesium hydroxide	magnesium carbonate
A	yes	yes	yes
B	yes	yes	no
C	no	yes	yes
D	yes	no	no

30. Calcium oxide reacts with water to form calcium hydroxide.
The equation for the reaction is



In this reaction the calcium oxide is

- A reduced
 - B oxidised
 - C dehydrated
 - D hydrated
31. Barium chloride solution, BaCl_2 , was mixed with dilute sulphuric acid.
A white precipitate of barium sulphate was formed.
The equation for the reaction is

- A $\text{BaCl}_2 + 2\text{HSO}_4 \rightarrow \text{Ba(SO}_4)_2 + 2\text{HCl}$
- B $\text{BaCl}_2 + \text{H(SO}_4)_2 \rightarrow \text{Ba(SO}_4)_2 + \text{HCl}_2$
- C $2\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{Ba}_2\text{SO}_4 + 2\text{HCl}_2$
- D $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{HCl}$

32. Jane carried out flame tests on four salts, W, X, Y and Z. Her results are shown in the table.

salt	flame colour
W	yellow
X	blue-green
Y	lilac
Z	green

Which of these are salts of metals in group 1 of the periodic table?

- A** W only
B Y and Z
C W and Y
D X and Y
33. Sodium nitrate is soluble in water. A pure sample of solid sodium nitrate is prepared in the laboratory. Which of these methods could safely be used?
- A** mix solutions of sodium chloride and potassium nitrate and filter the mixture
B react excess sodium with dilute nitric acid and filter the mixture
C mix solutions of sodium chloride and potassium nitrate and obtain crystals from the solution
D neutralise sodium hydroxide solution with dilute nitric acid and obtain crystals from the solution
34. The formula of a salt is NaClO_3 . The name of this salt is
- A** sodium chlorioxide
B sodium oxichloride
C sodium chlorate
D sodium chloride

Useful substances

35. When copper oxide is heated with substance X, copper is formed. Which row of the table shows substance X and what is happening to copper oxide during the reaction?

	substance X	copper oxide is
A	carbon dioxide	reduced
B	carbon	reduced
C	carbon dioxide	thermally decomposed
D	carbon	thermally decomposed

36. In industry, phosphoric acid is used to make some useful substances. Which row of the table is correct?

	phosphoric acid is used to make	
	synthetic detergents	fertilisers
A	no	no
B	no	yes
C	yes	no
D	yes	yes

Elements and compounds

37. Max added sodium hydroxide solution to a solution of a salt. He obtained a pale green precipitate. The formula of the substance precipitated could be

- A $\text{Cu}(\text{OH})_2$
- B $\text{Fe}(\text{OH})_2$
- C $\text{Zn}(\text{OH})_2$
- D $\text{Fe}(\text{OH})_3$

38. The table shows the boiling points of four halogens, W, X, Y and Z.

halogen	boiling point ($^{\circ}\text{C}$)
W	59
X	-188
Y	184
Z	-34

Which of these shows the four halogens in order of increasing atomic number?

- A Z, W, Y, X
 - B X, Z, W, Y
 - C Y, W, Z, X
 - D Z, X, W, Y
39. Chlorine reacts with potassium iodide solution. The equation for this reaction is

- A $\text{Cl} + \text{KI} \rightarrow \text{KCl} + \text{I}$
- B $\text{Cl}_2 + \text{KI}_2 \rightarrow \text{KCl}_2 + \text{I}_2$
- C $2\text{Cl} + 2\text{KI} \rightarrow 2\text{KCl} + \text{I}_2$
- D $\text{Cl}_2 + 2\text{KI} \rightarrow 2\text{KCl} + \text{I}_2$

40. Which of these statements about chlorine are correct?

- 1 chlorine turns moist red litmus paper blue and then bleaches it
- 2 chlorine is collected in the laboratory by downward delivery because it is soluble in water and less dense than air

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

TOTAL FOR HIGHER TIER PAPER: 24 MARKS

END