

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 20 June 2008 – 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.

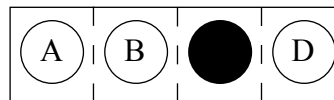
Before the test begins:

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

Making scones

The ingredients for making scones are

flour
table salt
sugar
baking powder
milk
margarine

The mixture of ingredients is cooked at a high temperature.

1. Table salt is mainly
 - A sodium oxide
 - B potassium chloride
 - C potassium oxide
 - D sodium chloride

2. When scones are cooked, the change that occurs is
 - A a physical change
 - B neutralisation
 - C a chemical change
 - D hydration

3. The baking powder is used to make the scones
 - A more attractive
 - B heavy
 - C keep fresh
 - D rise as they cook

4. When baking powder is heated strongly a compound in it breaks down to form carbon dioxide. The reaction that occurs is
 - A neutralisation
 - B thermal decomposition
 - C electrolysis
 - D combustion

5. A flame test on the baking powder produced a yellow coloured flame. This shows that baking powder contains a compound of
- A sodium
 - B copper
 - C potassium
 - D calcium

Periodic table

Use the following information to answer questions 6 to 10.

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

Li															O		
	Ca										Cu						
	Ba																

Use only the atomic symbols of the elements shown in this periodic table to answer the questions.

6. Which atomic symbol represents a non-metal?
- A Li
 - B Ca
 - C Cu
 - D O
7. The atomic symbols of two elements in group 2 of the periodic table are
- A Li and O
 - B Ca and Ba
 - C Ca and Cu
 - D Ba and Cu

8. Early versions of the periodic table were not complete. Some spaces were left empty. It was necessary to leave these spaces empty because
- A some elements had not been discovered
 - B the atomic symbols of some elements were incorrect
 - C it was a mistake
 - D some elements form coloured compounds
9. All atoms of copper, Cu, contain the same number of
- A molecules
 - B neutrons
 - C protons
 - D particles
10. The atomic symbols of two elements in period 2 of the periodic table are
- A Li and O
 - B Ca and Ba
 - C Ca and Cu
 - D Ba and Cu

Cola

The ingredients of the cola are

caramel
carbonated water
aspartame sweetener
phosphoric acid
citric acid



11. Which gas is dissolved in water to make carbonated water?

- A oxygen
- B nitrogen
- C carbon dioxide
- D hydrogen

12. The aspartame sweetener, $C_{14}H_{18}N_2O_5$, is man-made.
Aspartame is

- A obtained from plants
- B a natural substance
- C an element
- D an artificial substance

13. The formula for citric acid is $C_6H_8O_7$.
Citric acid does **not** contain atoms of

- A carbon
- B hydrogen
- C oxygen
- D nitrogen

14. Citric acid is used in cola to improve the

- A colour
- B taste
- C shelf-life
- D fizziness

Use the following information to answer questions 15 and 16.

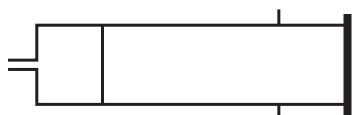
Cola reacts with baking powder to form carbon dioxide.

15. Carbon dioxide can be identified using

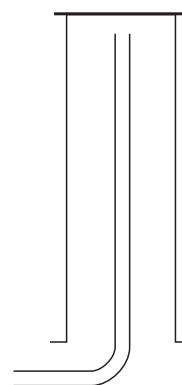
- A universal indicator
- B a glowing splint
- C limewater
- D a lighted splint

16. Which apparatus would be most suitable to collect carbon dioxide?

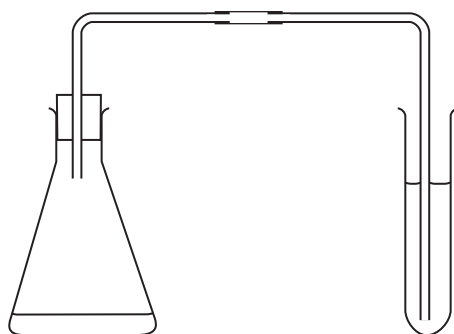
A



B



C



D



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.

Properties of elements

Use the following information to answer questions 17 to 20.

The table shows information about the physical and chemical properties of four elements, **A**, **B**, **C** and **D**.

element	melting point (°C)	boiling point (°C)	electrical conductivity	reactivity
A	-101	-35	poor	reactive
B	-189	-186	poor	unreactive
C	98	890	good	reactive
D	114	184	poor	reactive

17. Which element could be in group 0 of the periodic table?
18. Which element could be chlorine?
19. Which element could be sodium?
20. Which element could be iodine?

Extraction of iron

Iron is obtained from a rock containing haematite.

Haematite is iron(III) oxide.

Iron is obtained when haematite is heated with carbon in air.

21. Rocks from which metals are extracted are
- A** pure compounds
 - B** ores
 - C** always metal oxides
 - D** magnetic

22. The word equation for the formation of iron is



Which row of the table shows the substance that is reduced and the substance that is oxidised in this reaction?

	substance that is reduced	substance that is oxidised
A	carbon monoxide	iron(III) oxide
B	carbon dioxide	iron(III) oxide
C	iron(III) oxide	carbon monoxide
D	iron(III) oxide	carbon dioxide

23. Metals which are very reactive compared with iron are most likely to be extracted from their ores by

- A heating with oxygen
- B heating with carbon
- C reacting with acid
- D electrolysis

24. Silver and copper can be found uncombined in the Earth's crust. This is because they are

- A metals
- B expensive
- C unreactive
- D rare

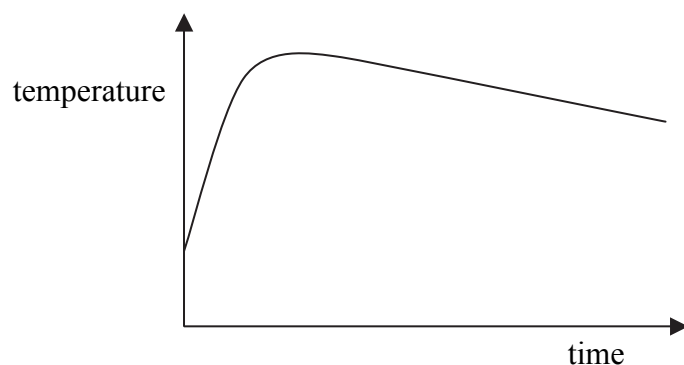
TOTAL FOR FOUNDATION TIER PAPER: 24 MARKS

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.**

Sulphates

Sulphuric acid reacts with sodium hydroxide to form sodium sulphate.
Dilute sulphuric acid and dilute sodium hydroxide solutions were mixed.
The temperature of the mixture was measured at intervals until long after the reaction was complete.
The graph shows the change in temperature of the mixture.



25. The graph shows that the reaction was

- A endothermic
- B exothermic
- C exothermic and endothermic
- D neither exothermic nor endothermic

26. Which row of the table shows the type of reaction between sulphuric acid and sodium hydroxide and the nature and the formula of the sodium sulphate formed?

	type of reaction	nature of sodium sulphate is	formula of sodium sulphate
A	neutralisation	a base	Na_2SO_4
B	neutralisation	a salt	NaSO_4
C	neutralisation	a salt	Na_2SO_4
D	hydration	a base	NaSO_4

27. Which of these substances would **not** be used to react with dilute sulphuric acid to prepare pure magnesium sulphate?
- A magnesium chloride
 - B magnesium hydroxide
 - C magnesium oxide
 - D magnesium carbonate

28. When solutions of magnesium sulphate and calcium nitrate are mixed a precipitate of calcium sulphate is formed. To obtain a sample of pure, dry calcium sulphate from the mixture, the sequence of steps used is

- A wash dry filter
- B evaporate wash dry
- C filter dry wash
- D filter wash dry

Periodic table

Use the following information to answer questions 29 to 32.

Part of the periodic table is shown.

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

Li																O		
	Ca											Cu						
Rb	Sr																	

29. Which row of the table correctly describes the nature of elements in the periodic table and how they are arranged?

	most elements are	elements are arranged in order of increasing
A	metals	relative atomic mass
B	non metals	relative atomic mass
C	metals	atomic number
D	non metals	atomic number

30. Which row of the table correctly describes the positions in the periodic table of the elements calcium, Ca, and strontium, Sr, and how their chemical properties compare?

	position in periodic table	comparison of chemical properties
A	group 2	similar
B	group 2	no similarity
C	period 2	similar
D	period 2	no similarity

31. Here are two statements about lithium and rubidium.

- 1 lithium is more reactive than rubidium with cold water.
- 2 lithium and rubidium are alkaline earth metals.

Which of these statements are correct?

- A** 1 only
B 2 only
C both 1 and 2
D neither 1 nor 2
32. Here are three statements about the position of copper and oxygen in the periodic table.

- 1 copper is in group 3
- 2 oxygen is in period 2
- 3 copper is in period 3

Which of these statements are correct?

- A** 1 only
B 2 only
C 3 only
D none of these

Copper compounds

33. When copper carbonate, a green powder, is heated a black solid is formed. The equation for this reaction is



Which row of the table correctly describes the type of reaction and the test for the gas produced?

	type of reaction	test for gas produced
A	thermal decomposition	lighted splint extinguished
B	oxidation	limewater turns cloudy
C	thermal decomposition	limewater turns cloudy
D	reduction	lighted splint extinguished

34. When copper carbonate reacts with dilute sulphuric acid, the only products are

- A** copper sulphate and water
- B** copper oxide, water and carbon dioxide
- C** copper sulphate, water and carbon dioxide
- D** copper oxide and water

35. The equation shows the effect of heat on copper sulphate crystals, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$







Which row of the table describes the type of change occurring when copper sulphate crystals are heated and shows what is formed?

	type of change	what is formed
A	hydration	copper sulphate solution
B	dehydration	copper sulphate and water
C	hydration	copper sulphate and water
D	dehydration	copper sulphate solution

36. Copper reacts with hot concentrated sulphuric acid to form copper sulphate, water and sulphur dioxide gas.
Sulphur dioxide is a poisonous gas which can be collected by downward delivery.
Attempts to collect sulphur dioxide over water result in water being sucked back into the reaction flask.

Use the information above to decide which row of the table shows the density and solubility of sulphur dioxide and the hazard label that should appear on a cylinder of it.

	density compared with air	solubility in water	hazard label
A	less dense	very soluble	
B	more dense	slightly soluble	
C	less dense	slightly soluble	
D	more dense	very soluble	

Bromine – a halogen

The table shows the particles present in an atom of bromine.

particle	number of particles in the atom
electron	35
neutron	44
proton	35

37. Which of these statements is correct?
- A** the atomic number of bromine is 44
 - B** all halogen atoms contain 35 electrons
 - C** all atoms of bromine contain 35 protons
 - D** the atomic number of bromine is 79

Use this information to answer questions 38 and 39.

Bromine displaces iodine from potassium iodide solution.

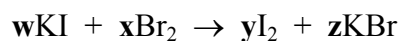
38. Here are three statements about the reaction of bromine with potassium iodide solution.

- 1 the reaction is a neutralisation
- 2 after reaction the solution is colourless
- 3 the reaction occurs because iodine is more reactive than bromine

Which of these statements are correct?

- A** 1 only
B 2 only
C 3 only
D none of these

39. The equation for the reaction can be represented by



Which row of the table shows values of **w**, **x**, **y** and **z** that give a balanced equation?

	w	x	y	z
A	1	2	1	2
B	1	1	1	1
C	2	1	1	2
D	2	1	2	1

40. The formula of a compound containing bromine atoms is NaBrO_3 .
The correct name of this compound is

- A** sodium bromide
B sodium bromate
C sodium bromioxide
D sodium oxybromide

TOTAL FOR HIGHER TIER PAPER: 24 MARKS

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