Surname	Initial(s)
Signature	

Paper Reference(s)

5007 5035

Edexcel GCSE

Science (5007)

Chemistry (5035)

C1a – Topics 5 and 6

Foundation and Higher Tiers

Friday 20 November 2009 – Morning

Time: 20 minutes

Materials required for examination
Multiple Choice Answer Sheet
HB pencil, eraser and calculator

Items included with question papers
Nil

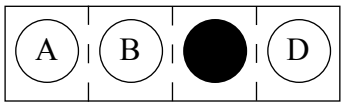
Instructions to Candidates

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.

Gases

1. Helium and hydrogen are gases which are less dense than air.
Helium is used to fill airships.

Helium is used instead of hydrogen because

A helium is coloured but hydrogen is colourless
B helium is unreactive but hydrogen burns in air
C hydrogen is a good conductor of electricity
D helium is a good conductor of heat

2. The correct symbol for an atom of hydrogen is

A Hy
B hy
C H
D H_2

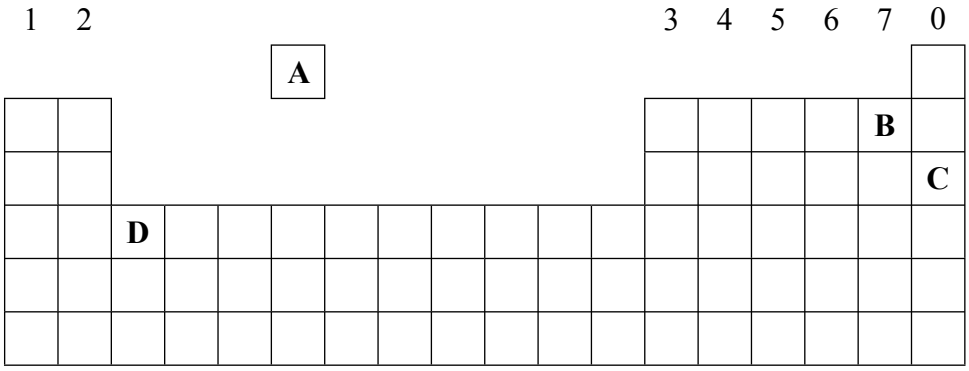
3. A test for hydrogen is that

A when mixed with air and lit, it burns with a squeaky pop
B it relights a glowing splint
C it turns limewater milky
D it turns red litmus solution blue

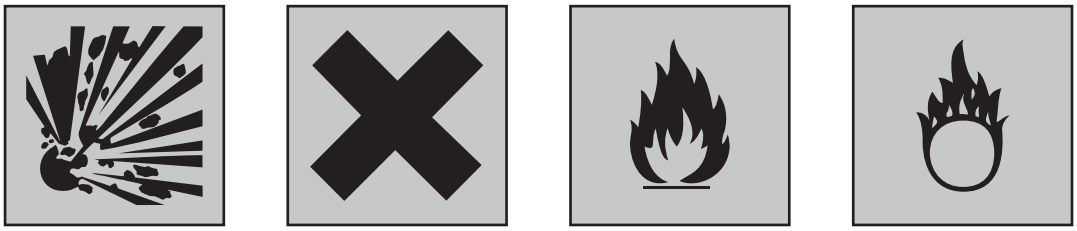
4. Helium and argon are in the same group in the periodic table.
Helium and argon

A form similar compounds
B are both unreactive
C burn in air
D react together

5. Argon is a noble gas.
Which letter shows the position of argon in the periodic table?



6. Which of these hazard symbols should be used to show that hydrogen is flammable?



A **B** **C** **D**

Potassium chloride

7. Potassium chloride is a

A non-metallic element
B mixture
C salt
D metallic element

8. Potassium chloride can be made by reacting potassium hydroxide solution with dilute hydrochloric acid.
This reaction is an example of

A neutralisation
B thermal decomposition
C hydration
D oxidation

9. Which of the following could be used to show that potassium chloride is a potassium compound?

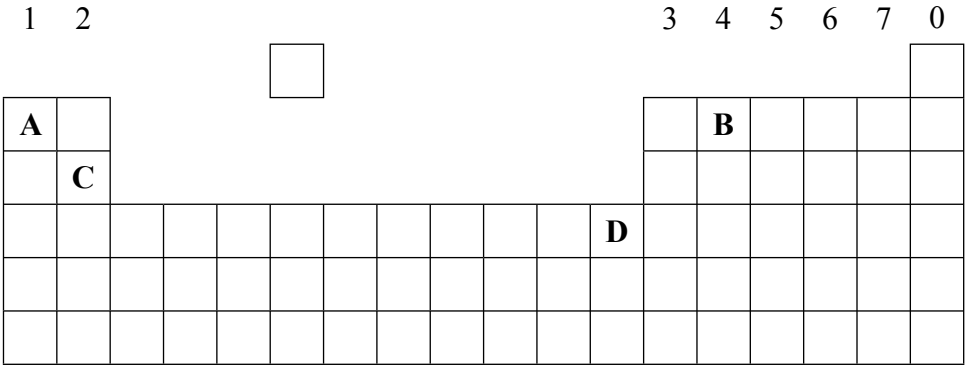
A a flame test
B universal indicator paper
C hydrochloric acid
D sodium hydroxide solution

10. Potassium chloride is one of the salts present in sea water.
Potassium chloride obtained from sea water

A is artificial
B is a pollutant
C is natural
D has a different composition from that made by a chemical reaction

Metals and their compounds

11. The letters show the position of three metals and one non-metal in the periodic table.
Which letter shows the position of the non-metal?



12. Iron is a metal.
Iron is usually found in the Earth's crust as

A steel
B an alloy
C an ore
D the metal

13. Gold is an unreactive metal.
Gold is usually found in the Earth's crust as

A a salt
B an oxide
C a compound
D the metal

14. Silver is used to make jewellery because it

A is a non-metal
B is usually unreactive
C is in group 1 of the periodic table
D has a very low melting point

15. John mixes sodium hydroxide solution with copper sulphate solution.
What should he see?

A bubbles of gas
B a green solid
C a blue solid
D a colourless solution

16. Copper is used to make water pipes because it

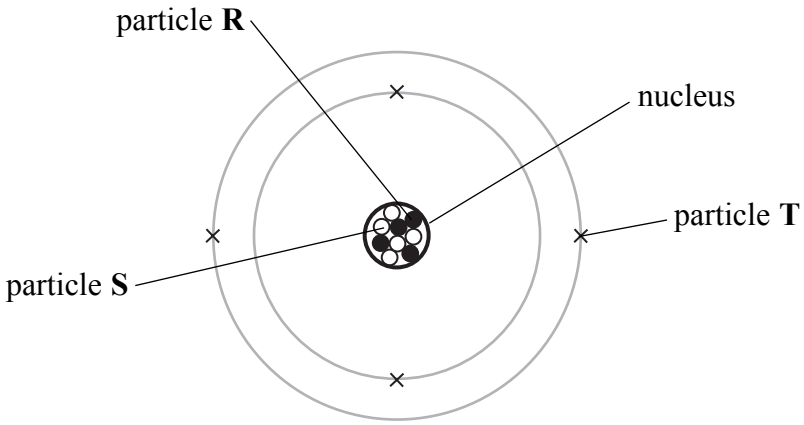
A is brittle
B conducts electricity
C is malleable
D is shiny

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.

Atoms

Use the following information to answer questions 17 to 19.

This diagram shows the particles in an atom of beryllium.



17. Which row of the table correctly describes particles **R** and **S**?

	particle R	**particle S**
A	electron	neutron
B	proton	electron
C	neutron	electron
D	proton	neutron

18. What is the atomic number of beryllium?

A 2
B 4
C 5
D 9

19. Which row of the table shows the charge on a proton, a neutron and an electron?

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

20. Magnesium and beryllium have similar properties.
For example, the formulae of their chlorides are $MgCl_2$ and $BeCl_2$.
In the periodic table, magnesium is most likely to be

A in the same group and period as beryllium
B in the same group but a different period from beryllium
C in a different group and the same period as beryllium
D in a different group and a different period from beryllium

Metals

21. Lead is obtained from a substance called galena.
Galena is converted into lead oxide.
Lead is obtained from lead oxide by

A adding dilute hydrochloric acid
B heating with carbon
C heating with nitrogen
D heating in the absence of air

22. Lead can also be obtained from lead oxide by passing hydrogen over the heated lead oxide.
The reaction is

$$\text{lead oxide} + \text{hydrogen} \rightarrow \text{lead} + \text{water}$$

During this reaction the hydrogen is

A hydrated
B dehydrated
C oxidised
D reduced

23. Aluminium is extracted from aluminium oxide by electrolysis.
It is necessary to use electrolysis because

A aluminium is a reactive metal and its oxide is stable
B aluminium is an unreactive metal and its oxide is stable
C aluminium is a reactive metal and its oxide is unstable
D aluminium is an unreactive metal and its oxide is unstable

24. Corrosion is a problem when using some metals.
One product of corrosion is rust.
Which row of the table shows a metal that rusts and a substance used in rust removers?

	metal	**used in rust removers**
A	iron	sodium chloride
B	aluminium	sodium chloride
C	iron	phosphoric acid
D	aluminium	phosphoric acid

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.

Carbon dioxide

25. The test to show that a gas is carbon dioxide is that the gas

A puts out a burning splint
B turns moist red litmus paper blue
C turns limewater milky
D dissolves in water to form an acidic solution

26. Baking powder contains

A sodium hydrogencarbonate only
B sodium hydrogencarbonate and another substance
C sodium carbonate only
D sodium carbonate and another substance

27. If water is added to baking powder, carbon dioxide is produced.
The reaction taking place is

A dehydration
B neutralisation of an acid
C thermal decomposition
D oxidation

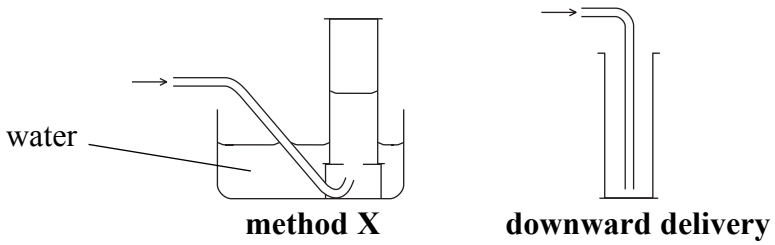
28. When copper carbonate is heated the reaction is

$$\text{copper carbonate} \rightarrow \text{copper oxide} + \text{carbon dioxide}$$

This reaction is an example of

A oxidation
B reduction
C thermal decomposition
D neutralisation

29. Carbon dioxide gas can be collected by the two methods shown.



Which row of the table describes method **X** and two properties of carbon dioxide?

	method X	**solubility in water**	**density compared to air**
A	upward delivery	slightly soluble	less dense
B	over water	very soluble	more dense
C	upward delivery	very soluble	more dense
D	over water	slightly soluble	more dense

30. Which of these is the balanced equation for the reaction that takes place when zinc carbonate is heated?

A $ZnCO_2 \rightarrow Zn + CO_2$
B $2ZnCO_3 \rightarrow 2Zn + 2CO_2 + O_2$
C $ZnCO_3 \rightarrow ZnO + CO_2$
D $2ZnCO_3 \rightarrow 2ZnO + 2CO + O_2$

Ammonia

31. Which of these statements about ammonia are correct?

1 It turns moist blue litmus paper red
2 The formula of its molecule is NH_4

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

32. Which row of the table shows correct uses for ammonia?

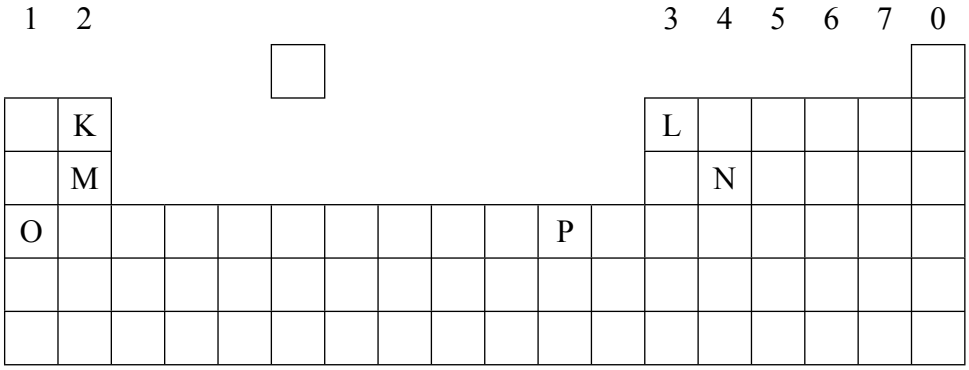
	to make fertilisers	**to make nitric acid**
A	yes	no
B	no	yes
C	yes	yes
D	no	no

33. Ammonium nitrate contains the elements

A ammonia, nitrogen and oxygen
B hydrogen, nitrogen and oxygen
C ammonium, nitrogen and oxygen
D hydrogen and nitrogen only

Metals

Use this periodic table to answer questions 34 to 36.



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

34. Which letter shows a metal in period 3?

A L
B M
C N
D O

35. Which letter shows an element that causes salts to produce a lilac flame in a flame test?

A M
B N
C O
D P

36. Which letter shows an element that has salts that, in solution, produce a pale blue precipitate with sodium hydroxide solution?

A K
B M
C O
D P

37. Which of these statements about the alkali metals are correct?

1 Their reactivity increases from lithium to caesium
2 They all have an endothermic reaction with water

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

38. Which row of the table shows the correct colours at room temperature and the boiling points of the halogens bromine and iodine?

	bromine		**iodine**	
	colour at room temperature	**boiling point (°C)**	**colour at room temperature**	**boiling point (°C)**
A	yellow-green	–34	purple	184
B	red-brown	–34	grey	59
C	red-brown	59	purple	184
D	red-brown	59	grey	184

Use the following information to answer questions 39 and 40.

Chlorine reacts with sodium iodide solution.

39. Which of these statements about the reaction are correct?

1 After the reaction the solution is colourless
2 The reaction takes place because iodine is more reactive than chlorine

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

40. The equation for this reaction is

A $Cl_2 + 2NaI \rightarrow 2NaCl + I_2$
B $Cl + NaI \rightarrow NaCl + I$
C $Cl_2 + NaI \rightarrow NaCl + ICl$
D $Cl_2 + NaI_2 \rightarrow NaCl_2 + I_2$

TOTAL FOR HIGHER TIER PAPER: 24 MARKS

END