



Surname	Initial(s)
Signature	

Paper Reference(s)

5008

5036

Edexcel GCSE

Science (5008)

Chemistry (5036)

C1b – Topics 7 and 8

Foundation and Higher Tier

Thursday 24 June 2010 – 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.

Printer's Log. No.

N37838A



W850/R1535/57570 6/6/5/6/2/

This publication may be reproduced only in accordance with Edexcel Limited copyright policy. ©2010 Edexcel Limited.

Turn over

edexcel 
advancing learning, changing lives

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

The environment

1. Global warming is an increase in the
 - A number of hours of sunshine
 - B temperature of the Sun
 - C temperature of the Earth
 - D number of days with no rain

2. Which of these may cause an increase in global warming?
 - A growing more trees
 - B growing crops to make bio-fuels
 - C walking instead of travelling by car
 - D burning fossil fuels

3. What percentage of the Earth's atmosphere is carbon dioxide?
 - A 70%
 - B 20%
 - C 5%
 - D less than 1%

4. The formula for carbon dioxide is
 - A CO
 - B CO²
 - C Co
 - D CO₂

5. Some people think that it would be better to use hydrogen rather than petrol as a fuel for cars. This is because
 - A large amounts of hydrogen gas are present in the atmosphere
 - B when hydrogen burns carbon dioxide is removed from the atmosphere
 - C when hydrogen burns the only substance formed is water
 - D burning hydrogen produces oxygen

6. Some plant pots are made from bamboo plants.
The bamboo used is from a sustainable source.
The fact that bamboo is from a sustainable source means
- A bamboo is a waste product
 - B new bamboo is grown to replace the bamboo plants cut down to make pots
 - C bamboo is unsuitable for other uses
 - D there are large amounts of bamboo available from this source
7. People are encouraged to recycle empty drink cans made of aluminium.
This is because
- A aluminium is a very rare metal
 - B aluminium rusts quickly
 - C drink cans made of aluminium are refilled
 - D recycling reduces waste
8. Sea water contains dissolved salts.
Pure water for drinking can be obtained from sea water by
- A distillation
 - B adding chlorine to the sea water
 - C filtration
 - D boiling the water before using it

Modern materials

9. Instruments used by dentists can be put in a special pouch before being sterilised at a high temperature.
These pouches have a pink arrow on the outside.
The arrow turns brown when sterilisation is complete.

The arrow is likely to be made of

- A a smart material
 - B universal indicator
 - C litmus
 - D Thinsulate
10. Tom likes to go sea fishing.



Tom's fishing rod is reinforced with fibres.
The best fibres for this reinforcing would be

- A carbon fibres that are strong and light
 - B Nomex fibres that are flame resistant
 - C steel fibres that are strong and dense
 - D Dacron fibres that provide good thermal insulation
11. Tom wears a coat to keep him warm.
Which of these is the most important property of the material used to make this coat?
- A flame retardant
 - B strong
 - C good thermal insulator
 - D brightly coloured

12. Tom's boots have a waterproof, breathable lining. This lining could be made from
- A Kevlar
 - B Gore-Tex
 - C Lycra
 - D Thinsulate

Drinks

This is part of a label from a pack containing coffee.

This packet contains coffee in a protective atmosphere of an unreactive gas.

13. The coffee is packed in a protective atmosphere to
- A prevent the pack being damaged by sharp objects
 - B prevent oxygen causing the coffee to deteriorate
 - C make the packaging smart
 - D reduce the amount of caffeine in the coffee
14. The gas used in the packaging is likely to be
- A nitrogen
 - B air
 - C hydrogen
 - D carbon monoxide
15. Alcoholic drinks are made by converting sugars into ethanol. This process is
- A distillation
 - B nanotechnology
 - C emulsification
 - D fermentation
16. Drinking alcoholic drinks can cause
- A improved thinking
 - B faster reactions
 - C liver damage
 - D clearer vision

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

Food products and cooking

17. Common salt is often added to food.
This salt is
- A sodium
 - B sodium hydroxide
 - C sodium carbonate
 - D sodium chloride
18. Hydrogen is used in the food industry.
An important use of hydrogen is
- A as a solvent
 - B in the sterilisation of milk
 - C in the manufacture of margarine
 - D as an oven cleaner
19. Mayonnaise is made from egg yolks, oil and vinegar.
If the egg yolks are not added to the mixture, the oil and vinegar
- A react
 - B separate
 - C deteriorate
 - D solidify
20. Beer is made using hops and malt.
Sugar from the malt is converted into ethanol by yeast.
The complete word equation for the reaction that takes place is
- A sugar + yeast → ethanol
 - B sugar → ethanol
 - C sugar → ethanol + carbon dioxide
 - D sugar + carbon dioxide → ethanol
21. Some saucepans have a non-stick coating made of Teflon.
Teflon
- A was first produced as a coating for saucepans
 - B is a natural substance
 - C has uses which only became apparent some time after it was first made
 - D is only used for coating saucepans

Fuels

22. Bio-ethanol can be used as a fuel for cars.
An advantage of using bio-ethanol instead of petrol is
- A growing plants to produce bio-ethanol removes carbon dioxide from the atmosphere
 - B incomplete combustion of bio-ethanol cannot produce carbon monoxide
 - C complete combustion of bio-ethanol does not produce carbon dioxide
 - D growing plants to produce bio-ethanol does not affect the amount of land available for food production
23. Nanotechnology is being used to produce catalysts which make diesel fuel burn more efficiently.
Use of these catalysts will
- A prevent waste products being produced
 - B reduce the percentage of toxic gases in exhaust fumes
 - C allow diesel-fuelled cars to use petrol as a fuel
 - D allow diesel-fuelled cars to travel more safely at high speeds
24. Kerosene fuel is a mixture of hydrocarbons.
The complete combustion of kerosene will produce
- A carbon monoxide only
 - B carbon dioxide only
 - C carbon monoxide and water
 - D carbon dioxide and water

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.**

Nanotechnology

Nanotechnology is used to produce nanoparticles.

- 25.** Scientists are interested in nanoparticles because the nanoparticles
- A** are the major cause of global warming, when released into the atmosphere
 - B** are intelligent
 - C** can make copies of themselves
 - D** have some unusual properties
- 26.** Nanoparticles of titanium(IV) oxide are used in some sunscreens.
These particles are
- A** just visible to the naked eye
 - B** smaller than atoms of titanium
 - C** smaller than molecules of oxygen but larger than atoms of titanium
 - D** smaller than conventional particles of titanium(IV) oxide
- 27.** Which of these statements are correct?
- 1 the media always produce reliable reports about nanotechnology
 - 2 the risks involved in the use of nanotechnology are fully understood
- A** 1 only
 - B** 2 only
 - C** both 1 and 2
 - D** neither 1 nor 2

Food and drink

Some food substances are emulsions.

28. An emulsion consists of an emulsifier in a mixture of

- A two liquids
- B a soluble solid and a liquid
- C an insoluble gas and a liquid
- D two aqueous solutions

29. Lecithin is a common emulsifier.
Which of these statements are correct?

- 1 lecithin molecules have a hydrophilic part and a hydrophobic part
- 2 the hydrophilic part of a lecithin molecule is attracted to oil

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

30. Some food packaging has a special coloured spot on it.
This spot changes colour to show when the food is no longer fresh enough to eat.
This method of packaging

- A stops the food from decaying
- B makes the packaging microbe resistant
- C makes the packaging easier to recycle
- D is intelligent packaging

31. These ingredients are used to brew beer.

- 1 hops
- 2 water
- 3 sugar
- 4 yeast

Which of these must be present to produce the ethanol in the beer?

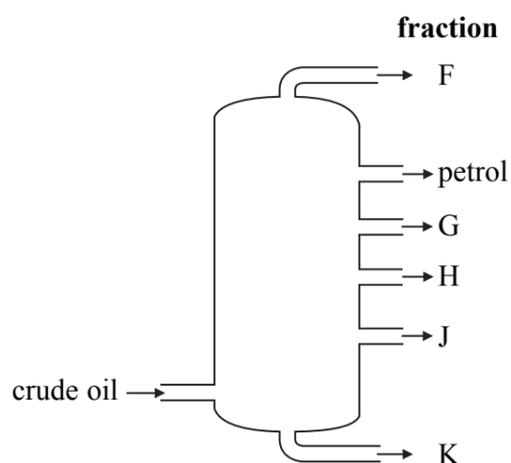
- A 3 and 4 only
- B 1, 3 and 4 only
- C 2, 3 and 4 only
- D 1, 2, 3 and 4

Industrial processes

32. In industry, oxygen is obtained from air.
This is done by
- A cooling the air until the oxygen separates as a liquid
 - B liquefying the air and then raising the temperature to boil the liquid air
 - C reacting the nitrogen in air with hydrogen and removing the ammonia formed
 - D passing the air into sodium hydroxide solution to remove all gases except oxygen

Use this information to answer questions 33 to 35.

The diagram shows a fractionating column used to separate crude oil into useful fractions.



33. Which of these statements is **not** correct?
- A crude oil enters the bottom of the column as a liquid
 - B each fraction contains more than one compound
 - C different fractions condense at different temperatures
 - D different crude oils have different compositions
34. The table gives names, average numbers of carbon atoms in a molecule and uses of the fractions F, H, J and K.
The average number of carbon atoms in the molecules in the petrol fraction is 8.

Which row of the table is correct?

	fraction	name	average number of carbon atoms in the molecules	used as a fuel for
A	F	gases	15	camping stoves
B	H	bitumen	20	lorries
C	J	fuel oil	45	ships
D	K	kerosene	13	aeroplanes

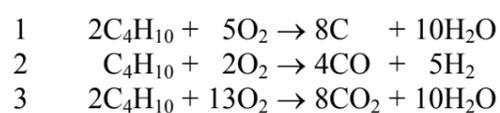
35. Compare fractions J and H.

Which row of the table is correct?

	boiling point of J	viscosity of J
A	higher than H	lower than H
B	higher than H	higher than H
C	lower than H	lower than H
D	lower than H	higher than H

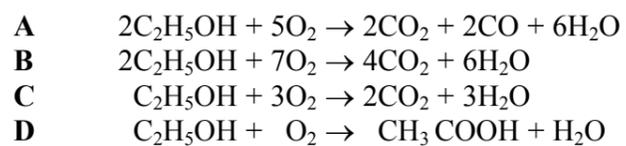
Burning fuels

36. Butane is used as a fuel.
Which of these equations are for reactions involving the incomplete combustion of butane?



- A 1 only
B 2 only
C 1 and 2 only
D 1 and 3 only
37. Some cars use hydrogen as a fuel.
Which of these statements about the use of hydrogen as a fuel are correct?
- 1 waste products are not released into the environment
2 hydrogen can be produced from water but large amounts of energy are required
- A 1 only
B 2 only
C both 1 and 2
D neither 1 nor 2
38. The incomplete combustion of fuels can produce carbon monoxide.
This occurs with
- A fossil fuels only
B fuels obtained from crude oil only
C all fuels
D any fuel containing carbon

39. Ethanol can be used as a fuel.
Which of these is the balanced equation for the complete combustion of ethanol?



40. Carbon monoxide is very dangerous because it is difficult to detect and toxic.
Which row of the table explains why carbon monoxide is difficult to detect and toxic?

	difficult to detect because it is	toxic because it combines with
A	colourless and odourless	oxygen
B	heavier than air	oxygen
C	colourless and odourless	haemoglobin in the blood
D	heavier than air	haemoglobin in the blood

TOTAL FOR HIGHER TIER PAPER: 24 MARKS

END