



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

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CO-ORDINATED SCIENCES

0654/11

Paper 1 Multiple Choice

May/June 2011

45 minutes

Additional Materials:

Multiple Choice Answer Sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Write your name, Centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.

There are **forty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A**, **B**, **C** and **D**.

Choose the one you consider correct and record your choice in soft pencil on the separate Answer Sheet.

Read the instructions on the Answer Sheet very carefully.

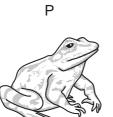
Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

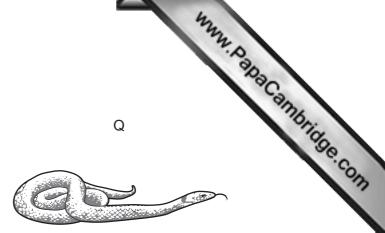
A copy of the Periodic Table is printed on page 16.



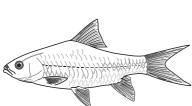


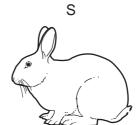








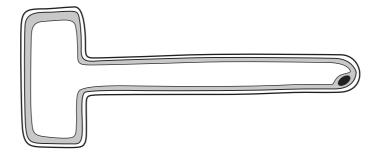




Which animals have lungs?

- A P, Q and R
- **B** Q, R and S
- **C** R, S and P
- S, P and Q

The diagram shows a root hair cell. 2



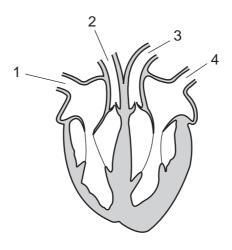
What shows that it is a plant cell?

- It has a large surface area.
- В It has a large vacuole.
- C It has no cell membrane.
- D It has no cell wall.

www.PapaCambridge.com Which molecule carries energy into a cell and which is a process that uses this energy 3

	molecule	process
Α	glucose	growth
В	iron	movement
С	protein	digestion
D	starch	storage

The diagram shows a section through the heart.



Which two blood vessels are arteries?

- 1 and 2
- 2 and 3
- C 3 and 4
- 4 and 1
- 5 Which process releases energy in all living things?
 - breathing
 - В digestion
 - muscle contraction
 - D respiration

6 Tests were carried out on a clear liquid. The table shows the results.

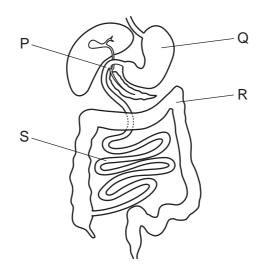
test	result	
biuret	purple colour	
ethanol	white colour	
iodine	brown colour	

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What did the clear liquid contain?

	fat	protein	starch	
Α	✓	✓	✓	key
В	✓	✓	X	✓= yes
С	✓	X	✓	x = no
D	X	✓	✓	

7 The diagram shows part of the alimentary canal.

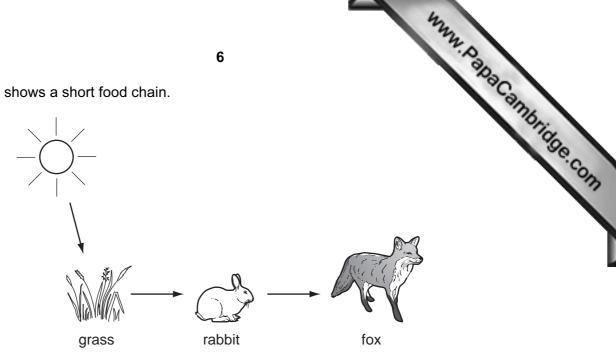


Where is bile added and where is acid released?

	addition of bile	release of acid
Α	Р	Q
В	Q	R
С	R	S
D	S	Р

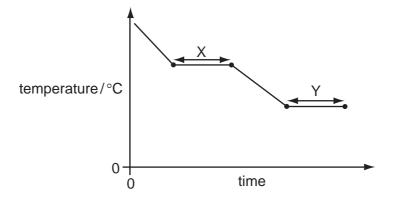
- 8 What happens shortly after eating a large amount of sugar?
 - **A** More insulin is secreted by the pancreas.
 - **B** More urea is made in the liver.
 - **C** More urine is excreted by the kidneys.
 - **D** More water is removed from the blood.
- **9** What passes from a mother to a fetus in her uterus?
 - A blood platelets
 - **B** mineral ions
 - C plasma
 - **D** red blood cells
- 10 Why is seed dispersal important?
 - A It causes the development of a fruit.
 - **B** It makes seeds more fertile.
 - C It prevents asexual reproduction.
 - **D** It reduces competition between seedlings.
- 11 Which is an example of cloning?
 - A pollinating flowers by insects
 - **B** producing offspring by sexual intercourse
 - C producing plants by tissue culture
 - **D** seeds forming in an ovary
- **12** What is an ecosystem?
 - A a community and its habitat
 - **B** a group of organisms and their predators
 - **C** all the organisms in a food chain
 - D where an organism lives

13 The diagram shows a short food chain.



In the food chain, what is the importance of the rabbit?

- It absorbs carbon dioxide.
- В It absorbs the Sun's energy.
- C It passes on energy from plants.
- D It releases oxygen.
- **14** The graph shows the changes in temperature when a substance is cooled.



Which describes the processes occurring at X and Y?

	Х	Υ
A boiling		melting
В	condensing	freezing
С	freezing	condensing
D	melting	boiling

www.PapaCambridge.com 15 Which trends in physical properties are correct for the alkali metals down Group I?

	hardness	melting point
Α	decreases	decreases
В	decreases	increases
С	increases	decreases
D	increases	increases

16 Large hydrocarbons can be1...... to make smaller, more useful molecules.

Small hydrocarbon molecules can be2..... to make long molecules.

Which words correctly complete gaps 1 and 2?

	1	2	
Α	cracked	distilled	
В	cracked	polymerised	
С	distilled	polymerised	
D	distilled	cracked	

17 What is made when amino acids join together in a large chain?

- cellulose Α
- glucose
- protein
- starch

18 Some properties of three substances are shown.

		8	nnn	Papa Cambridge .com
substance	melting point	boiling point	electrical conductivity when molten	ambridge
W	801	1413	good	COM
X	-111	-78	poor	
Υ	1610	2230	poor	

What are the structures of W, X and Y?

	giant covalent structure	giant ionic structure	molecular structure
Α	W	Υ	×
В	×	W	Y
С	Y	W	×
D	Υ	X	W

- **19** How is carbon (coke) used in the extraction of iron from iron oxide?
 - A as an anode
 - as a cathode
 - C as an oxidising agent
 - **D** as a reducing agent
- 20 Electrolysis of sodium chloride is used to obtain chlorine.

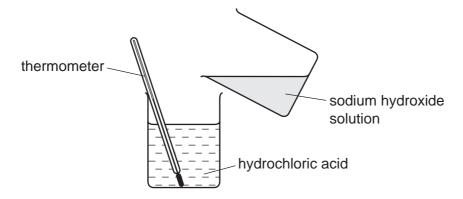
In what form is sodium chloride electrolysed and at which electrode is the chlorine obtained?

	form of sodium chloride	electrode at which chlorine is obtained	
Α	in aqueous solution	anode	
В	in aqueous solution	cathode	
С	solid	anode	
D	solid	cathode	

21 A solution is tested by adding acidified silver nitrate solution.

Which ion causes the white precipitate to form?

- **A** chloride ions, Cl^-
- **B** copper ions, Cu²⁺
- **C** hydroxide ions, OH⁻
- **D** sodium ions, Na⁺
- 22 Sodium hydroxide solution is added to hydrochloric acid.



Which shows how the pH and temperature change as the reaction takes place?

	рН	temperature	
Α	decrease	decrease	
В	decrease	increase	
С	increase decrease		
D	increase	increase	

- 23 Which statements about a positive test for a nitrate ion are correct?
 - 1 Aluminium is used.
 - 2 The nitrate ion is reduced to ammonia.
 - 3 Ammonia turns damp litmus paper red.
 - **A** 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

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24 Aspirin can be used to relieve headaches.

Which terms correctly describe aspirin?

	analgesic	chemotherapy agent	drug	
Α	✓	✓	X	key
В	✓	x	✓	✓= yes
С	X	✓	X	x = no
D	X	×	✓	

25 Which is not a colloid?

- A cellulose
- **B** milk
- **C** paint
- **D** smoke

26 Which statement about methane is **not** correct?

- **A** Methane burns in air to form carbon dioxide and water.
- **B** Methane can be obtained from the decay of waste material.
- **C** Methane is a fossil fuel.
- **D** When methane burns, an endothermic reaction takes place.

27 The diagram shows part of the Periodic Table.

Which element has atoms containing three electrons in the outer shell?

Α									D						
	В	С													

28 A student needs to find the density of a large cubic block of wood.

Which two pieces of apparatus should she use?

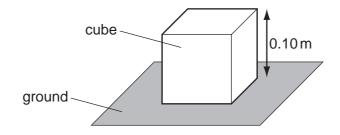
- A balance and metre rule
- **B** balance and thermometer
- **C** measuring cylinder and metre rule
- D measuring cylinder and thermometer
- 29 In an experiment, a student measures the time taken for an object to fall to the ground. He carries out the experiment ten times. The table shows his results.

time/s	26.4	26.8	26.4	24.4	24.0	26.8	25.4	23.4	26.4	24.0	
--------	------	------	------	------	------	------	------	------	------	------	--

Which value should the student use?

- **A** 24.0 s
- **B** 25.4 s
- **C** 26.4 s
- **D** 26.8s

30 One side of a cube stands on the ground.



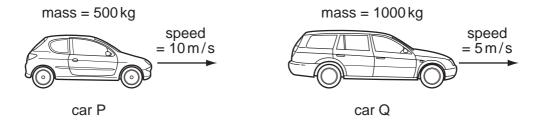
The cube weighs 200 N and its sides are 0.10 m long.

How much pressure does the cube exert on the ground?

- **A** 2.0 Pa
- **B** 20 Pa
- **C** 2000 Pa
- **D** 20 000 Pa

- 31 What is meant by the current in a wire?
 - A the charge flowing through the wire per second
 - B the energy the wire can transfer elsewhere per second
 - **C** the power the wire can produce per second
 - **D** the work the wire does per second

- 32 Which group contains only secondary colours of light?
 - A cyan, green, magenta
 - B cyan, green, yellow
 - C green, magenta, yellow
 - **D** yellow, cyan, magenta
- 33 Two cars have different masses and different speeds as shown.



How do the momentum and the kinetic energy of the two cars compare?

	momentum	kinetic energy
Α	P greater than Q	P less than Q
В	P equal to Q	P greater than Q
С	P equal to Q	P equal to Q
D	P less than Q	P equal to Q

34 A satellite orbits the Earth.

Is the satellite in a gravitational field and is the satellite in a magnetic field?

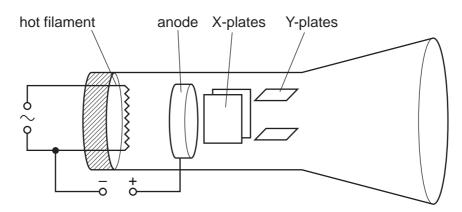
	a gravitational field	a magnetic field	
Α	✓	✓	key
В	✓	x	✓ = in field
С	x	✓	x = not in field
D	x	x	

35 Microphones and earphones are both used with audio equipment.

www.PapaCambridge.com Which energy change takes place in a microphone and which takes place in an earphone.

	microphone	earphone
Α	electrical to sound	electrical to sound
В	electrical to sound	sound to electrical
С	sound to electrical	electrical to sound
D	sound to electrical	sound to electrical

36 The diagram shows the basic structure of a cathode-ray tube in an oscilloscope.



From which component do the cathode rays start?

- Α the anode
- the hot filament В
- the X-plates
- the Y-plates D
- **37** Which row describes the properties of beta radiation?

	electromagnetic	ionising	
Α	✓	✓	key
В	✓	×	✓= yes
С	×	✓	x = no
D	X	×	

www.papaCambridge.com 38 Which process is used in a nuclear power station and which nuclear change hap process?

	process used	nuclear change
Α	fission	heavy nuclei split
В	fission	light nuclei join together
С	fusion	heavy nuclei split
D	fusion	light nuclei join together

39 Electrical energy from a power station is used a long distance away from it.

Which row shows the type of current needed and the device used for efficient transmission?

	type of current	device
Α	alternating	dynamo
В	alternating	transformer
С	direct	dynamo
D	direct	transformer

40 An electronic circuit is used as a temperature detector.



The current in the detector is small. The detector operates a component that allows it to control a larger current in a heater.

Which component is suitable?

- a diode
- a dynamo
- a reed relay
- **D** a transformer

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The Periodic Table of the Elements DATA SHEET

	0	4 He Helium	20 Neon 10	40 Ar Argon	8 X	Krypton 36	X	Xenon 54	R.	86			175 Lu
	II/		19 Fluorine	35.5 C1 Chlorine	8 4	Bromine 35	127 I	lodine 53	At	Astatine 85			173 Yb
	IN		00	32 S Sulfur	© 0	Selenium 34	128 Te	Tellurium 52	Po				169 Tm
	>		14 N itrogen 7	31 Phosphorus	75	Arsenic 33	122 Sb	Antimony 51	209 B	83			167 Ē
	\wedge		12 Carbon	28 Si licon	ي ع	Germanium 32	119 Sn	Ē	207 Pb				165 H
	=		11 Boron	_	٥ ر		115 In	Indium 49	204 T 1	81			162 Dy
					l .	Zinc 30	112 Cd	Cadmium 48	201 Hg	Mercury 80			159 Tb
							108 Ag			Cold			157 Gd
Group							106 Pd			78			152 Eu
Gre					₅₉ C	Cobalt 27	103 Rh		192 I r	77			150 Sm
		T Hydrogen			56 T	lron 26	101 Ru	Ruthenium 44	190 OS	76			Pm
						Manganese 25				Knemum 75			441 D
					²⁵	Chromium 24		Molybdenum 42	184 X	T4			141 Pr
					51	Vanadium 23	93 N	Niobium 41	181 Ta	73			Ce
					84 📙	Titanium 22	91 Z	Zirconium 40	178 H	* 72			
					45	Scandium 21	68 >	Yttrium 39	139 La	57 *	227 Ac	Actinium 89	series
	=		9 Be Beryllium	24 Mg Magnesium	^و 0	Calcium 20	88 Sr	Strontium 38	137 Ba	56	226 Ra	Radium 88	Inthanoid Actinoid se
	_		7 L.i Lithium 3	23 Na Sodium	® ×	Potassium 19		Rubidium 37	133 CS	55	Fr	Francium 87	*58-71 Lanthanoid series
		-	•		•		•		•				

www.papaCambridge.com Thullum Mo **E**rbium Fm Es Californium 98 2 ರ Terbium ਲ **Currium** gg **Eu** Europium Am Plutonium Pu ž Ра Cerium 232 **Th** 28 90 b = proton (atomic) number a = relative atomic mass X = atomic symbol 190-103 Actinoid series

Key

The volume of one mole of any gas is 24 dm³ at room temperature and pressure (r.t.p.).

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