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CAMBRIDGE
International Education

Cambridge IGCSE™

COMBINED SCIENCE **0653/12**

Paper 1 Multiple Choice (Core) **February/March 2026**

45 minutes

You must answer on the multiple choice answer sheet.

You will need: Multiple choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

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INSTRUCTIONS

- 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 multiple choice answer sheet.
- Follow the instructions on the multiple choice answer sheet.
- Write in soft pencil.
- Write your name, centre number and candidate number on the multiple choice answer sheet in the spaces provided unless this has been done for you.
- Do **not** use correction fluid or tape.
- Do **not** write on any bar codes.
- You may use a calculator.
- Take the weight of 1.0 kg to be 9.8 N (acceleration of free fall = 9.8 m/s^2).

INFORMATION

- The total mark for this paper is 40.
- Each correct answer will score one mark.
- Any rough working should be done on this question paper.
- The Periodic Table is printed in the question paper.

This document has **16** pages. Any blank pages are indicated.

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1 Four biological processes are listed.

1 ingestion

2 movement

3 reproduction

4 sensitivity

Which processes are characteristics of all living organisms?

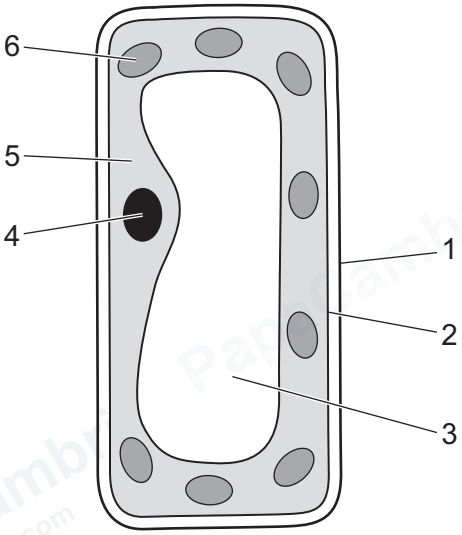
A 1, 2, 3 and 4

B 1, 2 and 3 only

C 1, 2 and 4 only

D 2, 3 and 4 only

2 The diagram shows a palisade mesophyll cell.



Which row describes the functions of the structures shown in the diagram?

	controls movement of substances into and out of the cell	site of photosynthesis	where most chemical reactions happen
A	2	6	5
B	2	4	3
C	1	4	5
D	1	6	3

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3 A student places an onion cell in a concentrated sodium chloride solution. After a few minutes, the cell membrane moves away from the cell wall.

Which statement explains what happens in the cell?

A Sodium ions move into the cell across the cell membrane by osmosis.

B Sodium ions move out of the cell across the cell membrane by osmosis.

C Water molecules move into the cell across the cell membrane by osmosis.

D Water molecules move out of the cell across the cell membrane by osmosis.

4 The table shows the results of some food tests.

Which row shows a food that contains only fat and protein?

	Benedict's solution	**biuret solution**	**ethanol**	**iodine solution**
A	red	blue	colourless	brown
B	red	purple	colourless	black
C	blue	purple	cloudy	brown
D	blue	blue	cloudy	black

5 What is necessary for photosynthesis?

1 carbon dioxide

2 chlorophyll

3 glucose

4 light

5 oxygen

6 water

A 1, 2, 4 and 6

B 1, 3, 4 and 6

C 2, 3, 4 and 5

D 3, 4, 5 and 6

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6 What is defined as the breakdown of food into smaller pieces, without chemically changing the molecules?

A absorption

B chemical digestion

C egestion

D physical digestion

7 A plant loses water vapour from its leaves.

What is the name of this process?

A transpiration

B respiration

C photosynthesis

D osmosis

8 Which row identifies the features of a vein?

	valves present	**wide lumen**	**thick wall**
A	no	no	yes
B	no	yes	no
C	yes	yes	no
D	yes	yes	yes

9 Which word describes a disease-causing organism?

A antibody

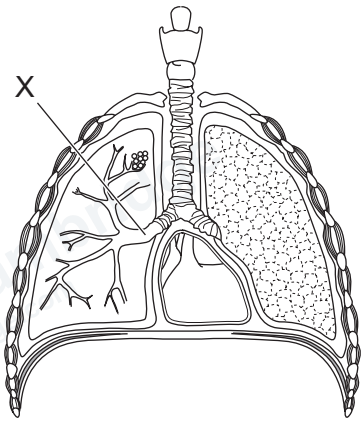
B antibiotic

C pathogen

D platelet

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10 The diagram shows the breathing system in humans.



What is the name of structure X?

A alveoli

B bronchus

C capillary

D trachea

11 Which word describes a substance taken into the body that modifies chemical reactions?

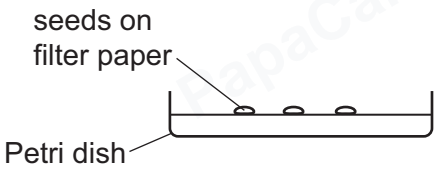
A cellulose

B drug

C fibre

D plasma

12 A student investigates the conditions needed for the germination of seeds in four different Petri dishes.

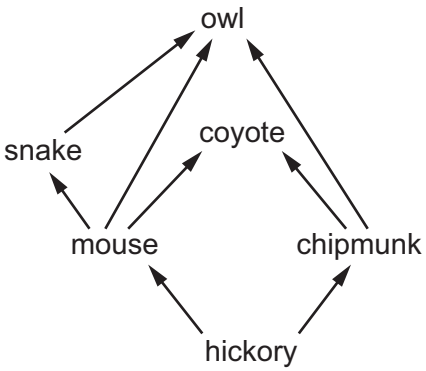


The conditions changed in each Petri dish are temperature and the presence of water.

Which row shows the conditions that cause most seeds to germinate?

	temperature	water
A	warm	no
B	warm	yes
C	cold	no
D	cold	yes

13 The diagram shows a food web.



Which row describes the chipmunk and the owl?

	chipmunk	**owl**
A	primary and secondary consumer	secondary and tertiary consumer
B	primary and secondary consumer	secondary consumer only
C	primary consumer only	tertiary consumer only
D	primary consumer only	secondary and tertiary consumer

14 The temperature and pressure of oxygen in two different containers are shown.

	temperature in °C	**pressure in kN / m^2**
container 1	20	200
container 2	50	150

Which statement about the oxygen molecules in container 1 compared to container 2 is correct?

A In container 1, the oxygen molecules are closer together and moving faster.

B In container 1, the oxygen molecules are closer together and moving slower.

C In container 1, the oxygen molecules are further apart and moving faster.

D In container 1, the oxygen molecules are further apart and moving slower.

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15 An atom of potassium has an atomic number of 19 and a mass number of 39.

Which statement describes this atom?

A It contains 19 neutrons.

B It contains 19 electrons.

C It contains 20 protons.

D It contains 39 protons.

16 Which substances are produced at the electrodes during the electrolysis of concentrated aqueous sodium chloride using inert electrodes?

A chlorine and hydrogen

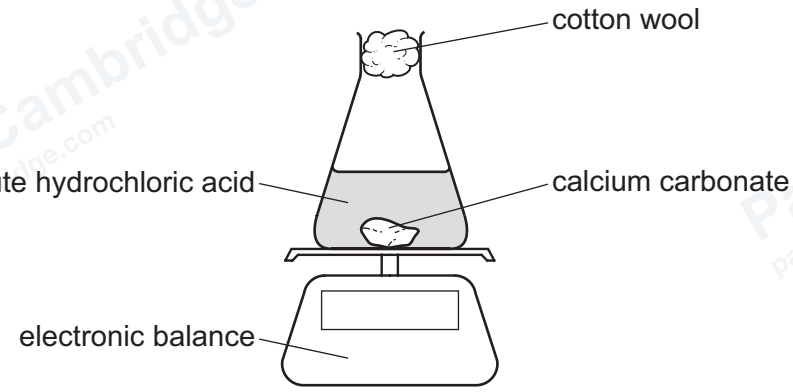
B chlorine and sodium

C oxygen and hydrogen

D oxygen and sodium

17 Calcium carbonate and dilute hydrochloric acid react to release a gas.

The apparatus used to determine the rate of reaction is shown.



Which statement explains why the cotton wool is used?

A It stops acid spray leaving the flask.

B It stops gas entering the flask from the surroundings.

C It stops gas escaping from the flask.

D It stops the reaction at the end of the experiment.

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18 Which gas is produced when magnesium carbonate reacts with dilute nitric acid?

A carbon dioxide

B carbon monoxide

C hydrogen

D nitrogen

19 What is the pH of a neutral solution?

A 1 **B** 4 **C** 7 **D** 12

20 How does the character of the elements change across a period of the Periodic Table from left to right?

A acidic to basic

B basic to acidic

C metallic to non-metallic

D non-metallic to metallic

21 Which two elements form the alloy brass?

A carbon and oxygen

B copper and zinc

C iron and carbon

D sodium and chlorine

22 Which statement explains why painting prevents iron from rusting?

A Painting prevents only oxygen from reaching the iron.

B Painting prevents only water from reaching the iron.

C Painting prevents carbon dioxide from reaching the iron.

D Painting prevents both oxygen and water from reaching the iron.

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23 Which statements about the fractions obtained from the fractional distillation of petroleum are correct?

1 The refinery gas fraction is used for making roads.

2 The gasoline fraction is used as fuel in diesel engines.

3 The fractions all consist of hydrocarbons.

4 The naphtha fraction is used as chemical feedstock.

A 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

24 Substance X contains only single bonds.

Substance X is generally unreactive, except in terms of combustion.

What is substance X?

A ethene

B methane

C carbon dioxide

D propene

25 Which pieces of apparatus measure exactly 25.0 cm^3 of dilute sulfuric acid?

1 beaker

2 measuring cylinder

3 volumetric pipette

4 burette

A 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

26 Copper(II) sulfate crystals are added to water in a beaker.

Which word describes the resulting mixture?

A salt

B solute

C solution

D solvent

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27 Which statement about the tests for aqueous cations is correct?

A A green precipitate is produced when aqueous sodium hydroxide is added to copper(II) ions.

B A white precipitate, soluble in excess, is produced when aqueous sodium hydroxide is added to calcium ions.

C A green precipitate is produced when aqueous ammonia is added to iron(III) ions.

D A white precipitate, soluble in excess, is produced when aqueous ammonia is added to zinc ions.

28 An explosion makes a loud sound.

A person is 1000 m from the place where the explosion happens.

The speed of sound in air is 340 m / s.

Which expression gives the time t in seconds for the sound of the explosion to reach the person?

A $t = 340 \times 1000$

B $t = \frac{2 \times 340}{1000}$

C $t = \frac{2 \times 1000}{340}$

D $t = \frac{1000}{340}$

29 What is the weight of an object?

A the acceleration of the object due to gravity

B the amount of matter in the object

C the energy of the object due to its position

D the force acting on the object due to gravity

30 Which row shows the unit of energy, the unit of power and the unit of work done?

	unit of energy	unit of power	unit of work done
A	joule	joule	watt
B	joule	watt	joule
C	watt	joule	watt
D	watt	watt	joule

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31 Which row describes the volume and the shape of a fixed mass of a liquid?

	volume	shape
A	**not** fixed	**not** fixed
B	**not** fixed	fixed
C	fixed	**not** fixed
D	fixed	fixed

32 During evaporation, particles escape from the surface of a liquid.

Which particles escape and how does this affect the temperature of the remaining liquid?

	particles that escape	temperature of liquid
A	particles with less energy	decreases
B	particles with less energy	increases
C	particles with more energy	decreases
D	particles with more energy	increases

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33 Diagram 1 shows a candle that heats air. The movement of the heated air causes a decoration to spin.

Diagram 2 shows the Earth being heated by the transfer of thermal energy from the Sun.

diagram 1

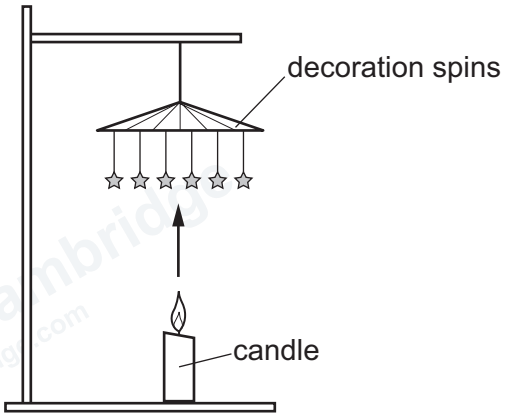
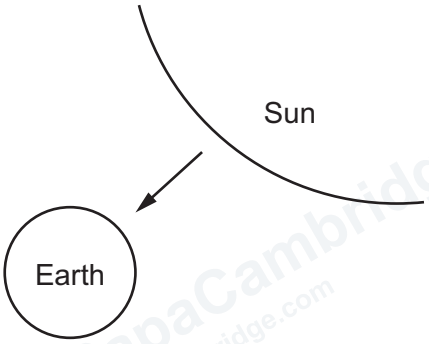


diagram 2



Which row shows the main method of thermal energy transfer in each diagram?

	diagram 1	diagram 2
A	convection	convection
B	convection	radiation
C	radiation	convection
D	radiation	radiation

34 Which equation relates wave speed v, frequency f and wavelength λ?

A $v = f\lambda$ **B** $v = \frac{f}{\lambda}$ **C** $v^2 = f\lambda$ **D** $v^2 = \frac{f}{\lambda}$

35 Which term is a region of the electromagnetic spectrum?

A gamma rays

B sound waves

C thermal energy

D ultrasound

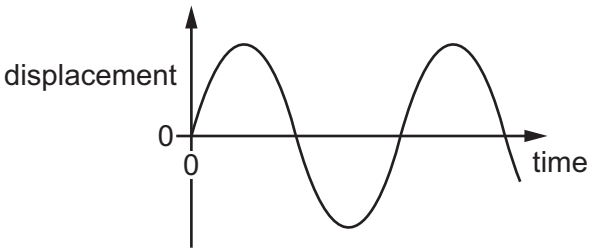
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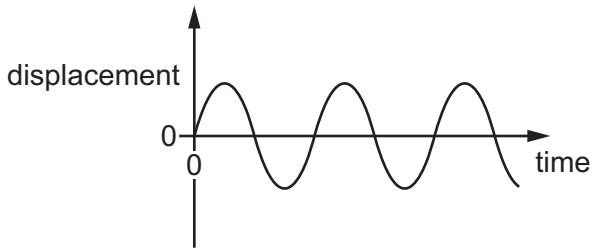
36 Graphs P and Q represent two sound waves.

The graphs are drawn to the same scale.

graph P



graph Q

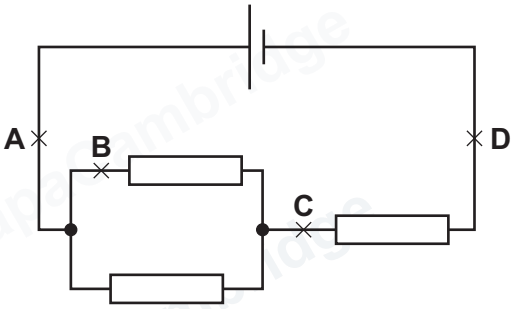


Which graph represents the louder sound and which graph represents the sound with the lower pitch?

	louder	lower pitch
A	P	P
B	P	Q
C	Q	P
D	Q	Q

37 The diagram shows a circuit that contains three identical resistors.

At which labelled point in the circuit is the current the smallest?



38 A worker uses an electric drill connected to a mains supply.

The worker's hands are wet.

Which statement is correct?

A Wet hands conduct electric current and can cause an electric shock.

B Wet hands conduct electric current and prevent an electric shock.

C Wet hands insulate the worker's body and can cause an electric shock.

D Wet hands insulate the worker's body and prevent an electric shock.

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39 Which circuit component transfers energy electrically to a kinetic energy store?

A battery

B generator

C motor

D solar cell

40 Some astronomical objects are listed.

- Jupiter
- a galaxy
- the asteroid belt
- a dwarf planet
- the Milky Way
- the Sun

How many of the objects are smaller in size than the Solar System?

A 2 **B** 3 **C** 4 **D** 5

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The Periodic Table of Elements

Group																	
I	II											III	IV	V	VI	VII	VIII
							1 H hydrogen 1										2 He helium 4
3 Li lithium 7	4 Be beryllium 9											5 B boron 11	6 C carbon 12	7 N nitrogen 14	8 O oxygen 16	9 F fluorine 19	10 Ne neon 20
11 Na sodium 23	12 Mg magnesium 24											13 Al aluminium 27	14 Si silicon 28	15 P phosphorus 31	16 S sulfur 32	17 Cl chlorine 35.5	18 Ar argon 40
19 K potassium 39	20 Ca calcium 40	21 Sc scandium 45	22 Ti titanium 48	23 V vanadium 51	24 Cr chromium 52	25 Mn manganese 55	26 Fe iron 56	27 Co cobalt 59	28 Ni nickel 59	29 Cu copper 64	30 Zn zinc 65	31 Ga gallium 70	32 Ge germanium 73	33 As arsenic 75	34 Se selenium 79	35 Br bromine 80	36 Kr krypton 84
37 Rb rubidium 85	38 Sr strontium 88	39 Y yttrium 89	40 Zr zirconium 91	41 Nb niobium 93	42 Mo molybdenum 96	43 Tc technetium –	44 Ru ruthenium 101	45 Rh rhodium 103	46 Pd palladium 106	47 Ag silver 108	48 Cd cadmium 112	49 In indium 115	50 Sn tin 119	51 Sb antimony 122	52 Te tellurium 128	53 I iodine 127	54 Xe xenon 131
55 Cs caesium 133	56 Ba barium 137	57–71 lanthanoids	72 Hf hafnium 178	73 Ta tantalum 181	74 W tungsten 184	75 Re rhenium 186	76 Os osmium 190	77 Ir iridium 192	78 Pt platinum 195	79 Au gold 197	80 Hg mercury 201	81 Tl thallium 204	82 Pb lead 207	83 Bi bismuth 209	84 Po polonium –	85 At astatine –	86 Rn radon –
87 Fr francium –	88 Ra radium –	89–103 actinoids	104 Rf rutherfordium –	105 Db dubnium –	106 Sg seaborgium –	107 Bh bohrium –	108 Hs hassium –	109 Mt meitnerium –	110 Ds darmstadtium –	111 Rg roentgenium –	112 Cn copernicium –	113 Nh nihonium –	114 Fl flerovium –	115 Mc moscovium –	116 Lv livermorium –	117 Ts tennessine –	118 Og oganesson –

Key

atomic number
atomic symbol
name
relative atomic mass

lanthanoids	57 La lanthanum 139	58 Ce cerium 140	59 Pr praseodymium 141	60 Nd neodymium 144	61 Pm promethium –	62 Sm samarium 150	63 Eu europium 152	64 Gd gadolinium 157	65 Tb terbium 159	66 Dy dysprosium 163	67 Ho holmium 165	68 Er erbium 167	69 Tm thulium 169	70 Yb ytterbium 173	71 Lu lutetium 175
actinoids	89 Ac actinium –	90 Th thorium 232	91 Pa protactinium 231	92 U uranium 238	93 Np neptunium –	94 Pu plutonium –	95 Am americium –	96 Cm curium –	97 Bk berkelium –	98 Cf californium –	99 Es einsteinium –	100 Fm fermium –	101 Md mendelevium –	102 No nobelium –	103 Lr lawrencium –

The volume of one mole of any gas is 24 dm^3 at room temperature and pressure (r.t.p.).

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