

Cambridge O Level

COMBINED SCIENCE

Paper 1 Multiple Choice

5129/12**May/June 2026****1 hour**

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)

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.

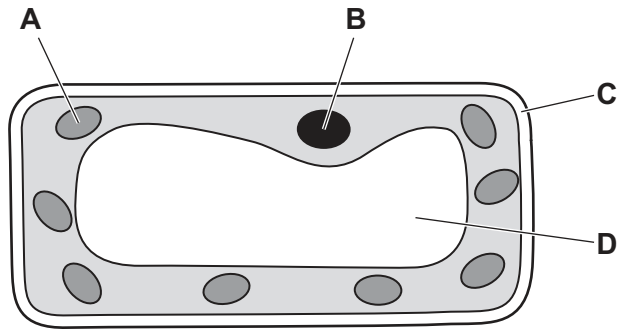
INFORMATION

- 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.

- 1 The diagram shows a plant cell.

Which labelled structure is a chloroplast?



- 2 Which type of biological molecule is an enzyme composed of?

- A carbohydrate
- B fibre
- C lipid
- D protein

- 3 Which equation is the balanced chemical equation for photosynthesis?

- A $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow 6\text{O}_2 + \text{C}_6\text{H}_{12}\text{O}_6$
- B $6\text{CO}_2 + \text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 6\text{O}_2 + 6\text{H}_2\text{O}$
- C $6\text{O}_2 + 6\text{H}_2\text{O} \rightarrow 6\text{CO}_2 + \text{C}_6\text{H}_{12}\text{O}_6$
- D $6\text{O}_2 + \text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$

- 4 Which features of a leaf are involved in gaseous exchange?

- 1 mesophyll cells
- 2 phloem
- 3 stomata
- 4 xylem

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

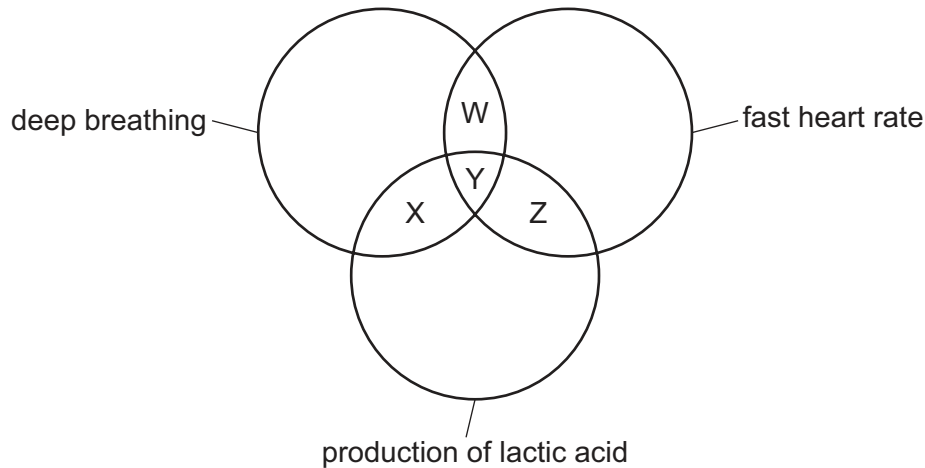
- 5 A sample of food was divided into 4 portions and tested as shown.

food sample	chemical test	observed colour
1	Benedict's solution	orange-red
2	biuret solution	purple
3	iodine solution	brown
4	ethanol emulsion	colourless

Which chemicals does the food contain?

- A** glucose and lipids
B glucose and protein
C starch and lipids
D starch and protein
- 6 Which processes are examples of absorption?
- 1 movement of nutrients into the blood from the cells of the intestine
 - 2 movement of nutrients into the cells of the intestine
 - 3 movement of water from the colon
- A** 1, 2 and 3 **B** 1 and 3 only **C** 2 and 3 only **D** 2 only
- 7 What is the function of the human alveoli?
- A** breathing
B diffusion
C gas exchange
D respiration

- 8 The diagram shows various changes that occur during and after vigorous exercise.



Which row is correct for the two stages?

	during vigorous exercise	after vigorous exercise
A	W	Y
B	X	Z
C	Y	W
D	Z	X

- 9 What is the function of phagocytes?

- A** clotting blood
- B** engulfing pathogens
- C** producing antibodies
- D** transporting oxygen

- 10 Which row correctly describes an effect of the excessive consumption of alcohol and an effect of tobacco smoke?

	excessive consumption of alcohol	tobacco smoke
A	damage to liver	bronchitis
B	increased self-control	increased reaction time
C	lung cancer	damage to liver
D	reduced reaction time	reduced self-control

11 Which type of cell transmits a message to the central nervous system in response to a stimulus?

- A effector cell
- B motor neurone
- C receptor cell
- D sensory neurone

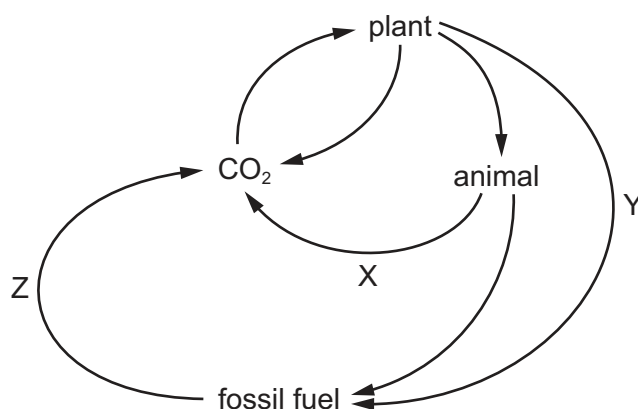
12 Some possible stages involved in the development of a baby are listed. Not all of the stages listed are correct.

- 1 fusion of gametes to form a zygote
- 2 fusion of gametes to form an embryo
- 3 meiosis in the testes
- 4 meiosis in the zygote
- 5 mitosis in the embryo
- 6 mitosis in the zygote

In which order do the stages occur?

- A 1 → 4 → 6 → 5
- B 2 → 5 → 6 → 4
- C 3 → 1 → 6 → 5
- D 3 → 2 → 5 → 6

13 The arrows in the diagram represent processes of the carbon cycle.



At which points in the carbon cycle could a rise in the human population cause an increase in atmospheric carbon dioxide concentration?

- A X, Y and Z
- B X and Y only
- C X and Z only
- D Y and Z only

14 In which changes of state do the particles lose energy?

- A boiling and melting
- B freezing and boiling
- C condensation and freezing
- D condensation and melting

15 Potassium chloride dissolves in water to form a mixture.

Which row describes this mixture?

	type of mixture	solute in the mixture
A	solution	potassium chloride
B	solution	water
C	solvent	potassium chloride
D	solvent	water

16 The electronic configurations of phosphorus and chlorine are shown.

P 2,8,5

Cl 2,8,7

Phosphorus and chlorine react to form a covalent compound.

What is the formula of the compound?

- A PCl B PCl_3 C P_3Cl D P_5Cl_7

17 Gold ethanedioate has the formula $Au_2(C_2O_4)_3$.

What are the formulae of the ions in gold ethanedioate?

- A Au^{2+} and $C_2O_4^{3-}$
- B Au^{3+} and $C_2O_4^{2-}$
- C Au^{3+} and CO_2^-
- D Au_2^{2+} and $C_6O_{12}^{3-}$

- 18 Sodium reacts with chlorine to produce sodium chloride.

What is the balanced equation for the reaction?

- A $\text{Na} + \text{Cl} \rightarrow \text{NaCl}$
- B $\text{Na} + \text{Cl}_2 \rightarrow \text{NaCl}_2$
- C $2\text{Na} + \text{Cl} \rightarrow \text{Na}_2\text{Cl}$
- D $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$
- 19 Which statement about the energy changes in a chemical reaction is correct?
- A In a neutralisation reaction, thermal energy is absorbed from the surroundings.
- B When ammonium nitrate is dissolved in water, the process is endothermic.
- C Cracking long-chain hydrocarbons is exothermic.
- D The temperature of the surroundings decreases when an exothermic reaction takes place.
- 20 Which statement about physical and chemical changes is correct?
- A Changes of state are chemical changes.
- B Combustion is a physical change.
- C Making a new compound is a physical change.
- D Neutralisation is a chemical change.
- 21 Substance X reacts with ammonium sulfate to produce a gas which turns damp red litmus paper blue.
- What is X?
- A calcium hydroxide
- B carbon dioxide
- C hydrochloric acid
- D sodium chloride
- 22 Which particle causes a solution to be alkaline?
- A H^+ B H^- C OH^+ D OH^-
- 23 Which group of the Periodic Table contains only elements that conduct electricity?
- A I B IV C VII D VIII

24 Which statement about the elements in Group VII is **not** correct?

- A Their boiling point increases down the group.
- B Their colour gets darker down the group.
- C They are all diatomic non-metals.
- D They become more reactive down the group.

25 Chromium is a typical metal.

Which row describes two properties of chromium?

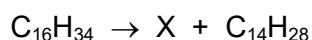
	property 1	property 2
A	breaks easily	good electrical conductivity when solid
B	breaks easily	poor electrical conductivity when solid
C	malleable	good electrical conductivity when solid
D	malleable	poor electrical conductivity when solid

26 Which statements about atmospheric pollutants are correct?

- 1 Carbon dioxide is a toxic gas produced by the incomplete combustion of fossil fuels.
- 2 Particulates can cause cancer and are produced by the incomplete combustion of fossil fuels.
- 3 Methane can cause increased global warming and is produced by the decomposition of vegetation.
- 4 Carbon monoxide is a toxic gas produced by digestion in animals.

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

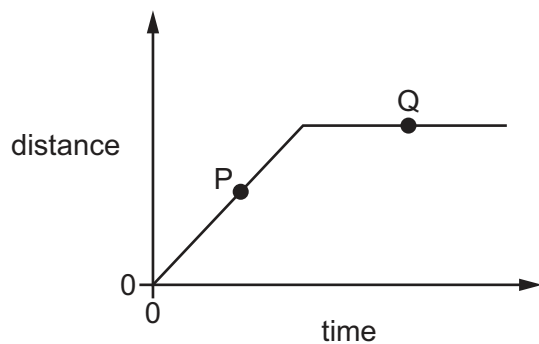
27 A long-chain hydrocarbon is cracked to produce an alkene and another product, X.



What is X?

- A ethane
- B ethene
- C hydrogen
- D methane

28 The graph shows the distance–time graph for a car.

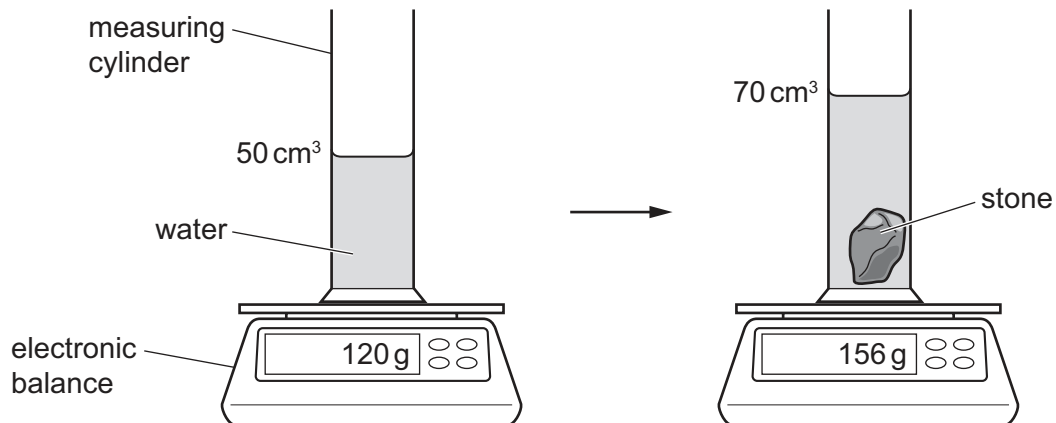


Which row describes the speed of the car at point P and the speed of the car at point Q?

	speed at point P	speed at point Q
A	constant	zero
B	constant	constant
C	increasing	zero
D	increasing	constant

- 29 A student determines the density of an irregularly shaped stone.

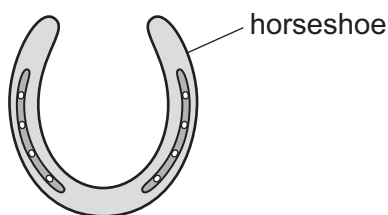
The diagrams show the student's results.



Which calculation gives the density ρ of the stone (in g/cm^3)?

- A $\rho = \frac{(70 + 50)}{(156 + 120)}$
- B $\rho = \frac{(70 - 50)}{(156 - 120)}$
- C $\rho = \frac{(156 + 120)}{(70 + 50)}$
- D $\rho = \frac{(156 - 120)}{(70 - 50)}$

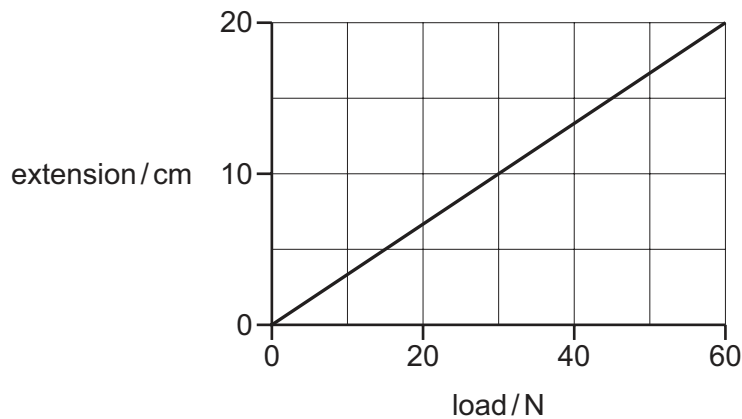
- 30 A horseshoe can be made from a piece of metal by first heating and then hammering the metal.



Which property of the piece of metal changes during the hammering action?

- A density
- B mass
- C shape
- D volume

31 The extension–load graph is for a spring.



The original length of the spring is 10 cm.

Which load gives a spring length of 15 cm?

- A** 5 N **B** 15 N **C** 30 N **D** 45 N

32 What is power?

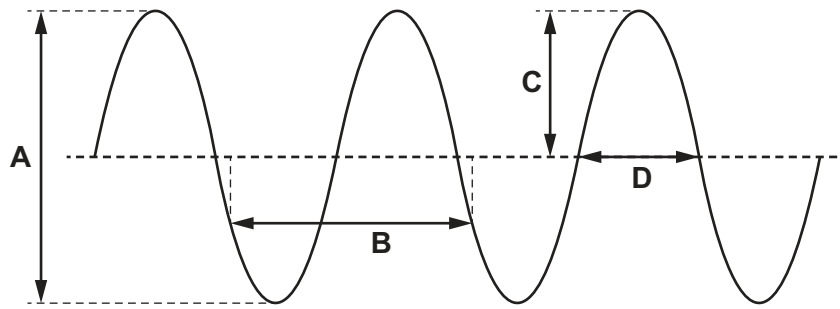
- A** $\frac{\text{energy transferred}}{\text{time taken}}$
- B** energy transferred $\times$ time taken
- C** $\frac{\text{force}}{\text{time taken}}$
- D** force $\times$ distance moved

33 Which row describes the motion of particles and the forces between particles in a solid?

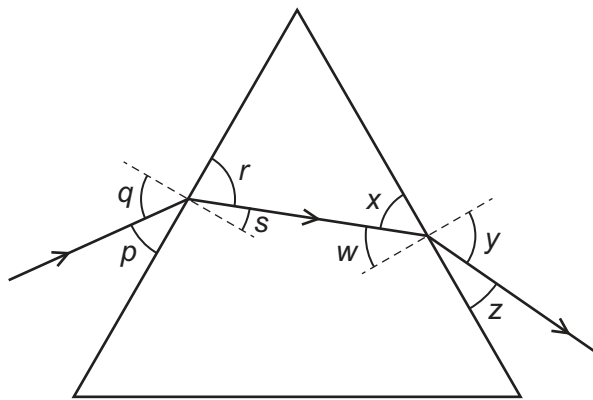
	motion	forces between particles
A	particles slide over one another	strong
B	particles vibrate in fixed positions	strong
C	particles slide over one another	weak
D	particles vibrate in fixed positions	weak

34 The diagram represents a transverse wave.

Which arrow represents the wavelength of the wave?



35 The diagram shows a ray of red light passing through a prism.



The dashed lines show the normals to the glass surfaces at the points where the light ray enters and leaves the glass prism.

Which two angles are angles of refraction?

- A** q and y **B** r and y **C** s and y **D** s and z

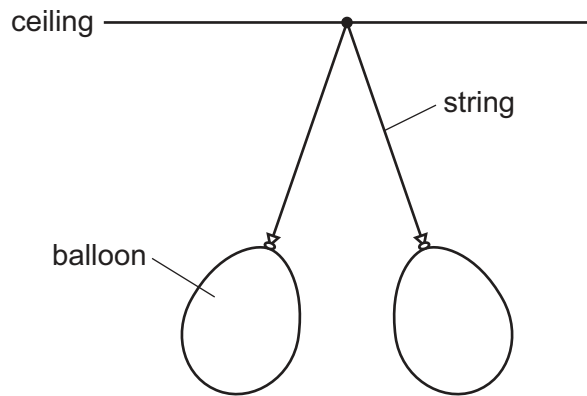
36 The diagram shows the main regions of the electromagnetic spectrum.

gamma rays	P	ultraviolet	Q	R	microwaves	radio waves
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What are the regions P, Q and R?

	P	Q	R
A	infrared	visible light	X-rays
B	infrared	X-rays	visible light
C	X-rays	infrared	visible light
D	X-rays	visible light	infrared

- 37 Two balloons are suspended from a ceiling by string and have moved apart as shown.



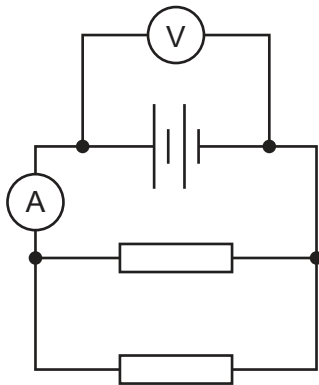
Which statement is correct?

- A One is charged and the other is uncharged.
 - B They are uncharged.
 - C They have like charges.
 - D They have unlike charges.
- 38 30 C of charge pass a point in a circuit in a time of two minutes.

What is the current in the circuit?

- A 0.25 A B 15 A C 60 A D 3600 A

39 The diagram shows two resistors connected to a battery.



Which row shows what happens to the voltmeter reading and the ammeter reading when a third resistor is connected in parallel to the resistors?

	voltmeter reading	ammeter reading
A	decreases	increases
B	decreases	stays the same
C	stays the same	decreases
D	stays the same	increases

40 Which statement about the isotopes of an element is correct?

- A** All isotopes are unstable and emit radiation.
- B** An element **cannot** have more than one isotope.
- C** Isotopes of the same element have the same mass number.
- D** Isotopes of the same element have the same proton number.

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The Periodic Table of Elements

Group																								
I	II	Key														III	IV	V	VI	VII	VIII			
3 Li lithium 7	4 Be beryllium 9	atomic number atomic symbol name relative atomic mass														1 H hydrogen 1								2 He helium 4
		11 Na sodium 23	12 Mg magnesium 24															5 B boron 11	6 C carbon 12	7 N nitrogen 14	8 O oxygen 16	9 F fluorine 19	10 Ne neon 20	
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 —							

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
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 —

actinoids

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