



Cambridge IGCSE™

CO-ORDINATED SCIENCES

0654/11

Paper 1 Multiple Choice (Core)

October/November 2025

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)

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.
- 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).

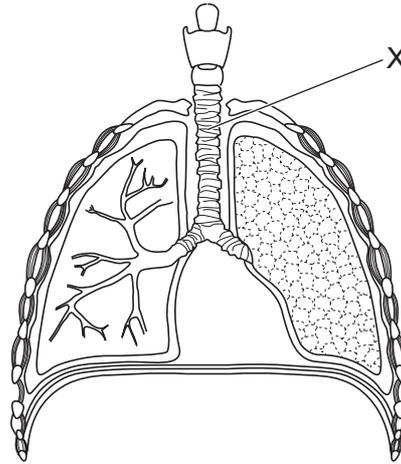
INFORMATION

- 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.



- 1 Which characteristic of living organisms is described as the chemical reactions in cells that break down nutrient molecules and release energy?
- A excretion
 - B nutrition
 - C photosynthesis
 - D respiration
- 2 The diagram shows part of the breathing system in humans.



Which cell type makes up part of structure X?

- A ciliated
 - B gamete
 - C palisade mesophyll
 - D phloem
- 3 What is an example of osmosis?
- A a leaf stalk swells up when placed in a bowl of water
 - B carbon dioxide enters a leaf during photosynthesis
 - C the movement of red blood cells to the lungs to collect oxygen
 - D the passage of digested food molecules through the wall of the small intestine

4 Which row represents a food that contains a reducing sugar and a fat?

	purple with biuret reagent	orange with Benedict's solution	milky-white with ethanol	blue-black with iodine solution
A	yes	no	no	yes
B	yes	no	yes	no
C	no	yes	no	yes
D	no	yes	yes	no

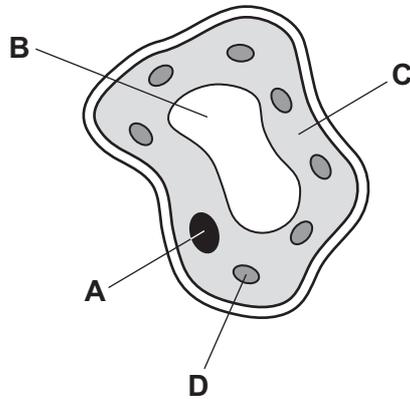
5 Which statements are correct for **all** enzymes?

- 1 They are proteins.
- 2 They are **not** affected by temperature.
- 3 They increase the rate of chemical reactions.
- 4 They work best at a high pH.

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

6 The diagram shows a section through a cell from a leaf.

Which part makes glucose using light?



7 Which location does undigested food move to after passing through the small intestine?

- A** blood
- B** large intestine
- C** pancreas
- D** stomach

8 What is a main function of root hairs?

- A absorb mineral ions
- B photosynthesis
- C support the stem
- D transport water to the leaves

9 Which row shows the functions of white blood cells?

	transport of oxygen	phagocytosis	antibody production
A	✓	x	x
B	✓	✓	x
C	x	✓	✓
D	x	x	✓

10 Which gas in expired air has a greater percentage composition than in inspired air?

- A carbon dioxide
- B methane
- C nitrogen
- D oxygen

11 Which structures make up the mammalian nervous system?

- A brain, muscles, impulses
- B brain, nerves, spinal cord
- C effectors, muscles, spinal cord
- D impulses, effectors, nerves

12 Which row describes sexual reproduction?

	zygote produced	genetically identical offspring always produced
A	✓	✓
B	✓	x
C	x	✓
D	x	x

13 A list of the stages of a process is shown.

- 1 Choose animals with the desired characteristics.
- 2 Breed the animals together.
- 3 Choose the offspring with the desired characteristics and breed the offspring.
- 4 Repeat over many generations.

What is this process called?

- A asexual reproduction
- B artificial selection
- C mutation
- D natural selection

14 Which statement about elements, compounds and mixtures is correct?

- A Compounds contain more than one type of atom.
- B Elements only exist as single, unbonded atoms.
- C Mixtures of compounds can only be separated by chemical processes.
- D Mixtures of elements are separated by electrolysis.

15 What is the nucleon number of the potassium isotope ${}_{19}^{40}\text{K}$?

- A 19
- B 21
- C 40
- D 59

16 Magnesium forms an ionic compound with chlorine.

Which row describes the formation of the magnesium ion and the formula of the magnesium ion?

	formation of the ion	formula of the ion
A	electron gain	Mg^{2+}
B	electron gain	Mg^{2-}
C	electron loss	Mg^{2+}
D	electron loss	Mg^{2-}

20 Magnesium ribbon is added to dilute hydrochloric acid.

Which observation shows that this process is exothermic?

- A The pH of the solution decreases.
- B The pH of the solution increases.
- C The temperature of the solution decreases.
- D The temperature of the solution increases.

21 Which type of substance reacts with an acid to produce a salt, water and a gas?

- A alkali
- B base
- C carbonate
- D metal

22 The element rubidium is in Group I of the Periodic Table.

It burns in oxygen to form an oxide.

Which row describes rubidium and its oxide?

	type of element	type of oxide
A	metal	acidic
B	metal	basic
C	non-metal	acidic
D	non-metal	basic

23 Which row describes the general properties of metals?

	melting point	electrical conductivity
A	high	good
B	high	poor
C	low	poor
D	low	good

24 Which air pollutants are produced by the combustion of fossil fuels in car engines?

- A carbon monoxide, oxides of nitrogen and sulfur dioxide
- B carbon monoxide and sulfur dioxide only
- C carbon monoxide and oxides of nitrogen only
- D oxides of nitrogen and sulfur dioxide only

25 Which process is used to obtain gasoline from petroleum?

- A crystallisation
- B chromatography
- C filtration
- D fractional distillation

26 Polymers are1..... chain molecules. They are formed when2..... join together.

Which words complete gaps 1 and 2?

	1	2
A	long	alkanes
B	long	monomers
C	short	alkanes
D	short	monomers

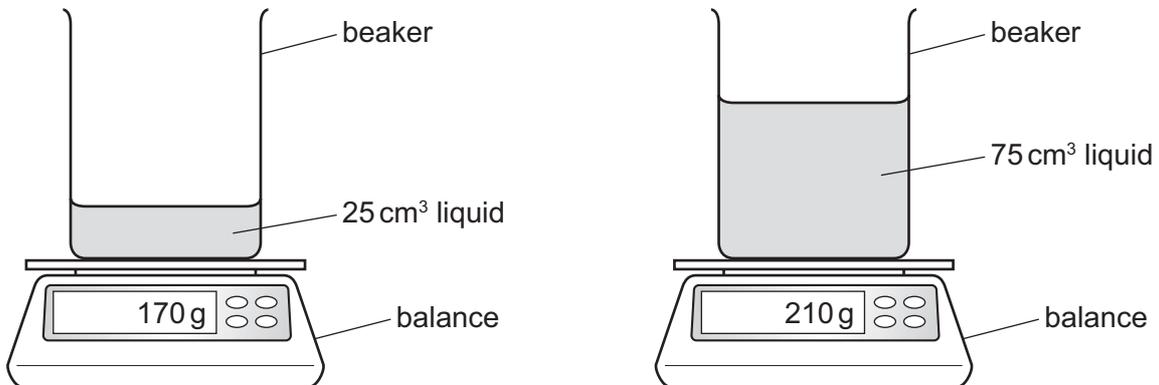
27 What is the colour of the flame produced by sodium in the flame test?

- A blue-green
- B red
- C lilac
- D yellow

28 Two identical beakers each contain different volumes of the same liquid.

The mass of the beakers is measured using a balance.

The diagram shows the volume of the liquid and the reading on the balance for each beaker.



What is the density of the liquid?

- A** 0.53 g/cm³ **B** 0.80 g/cm³ **C** 1.3 g/cm³ **D** 2.8 g/cm³

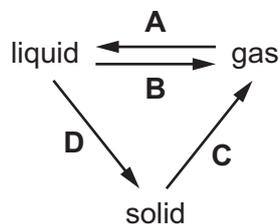
29 What is a unit of energy?

- A** W **B** N **C** kg **D** J

30 Which method of generating electrical power causes carbon dioxide to be released into the atmosphere?

- A** combustion of fossil fuels
B nuclear fission
C use of solar cells
D use of wind turbines

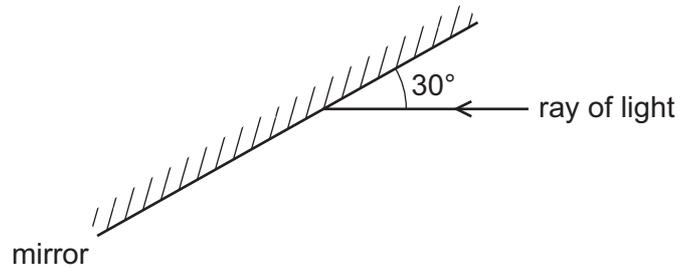
31 Which labelled arrow on the diagram represents condensation?



32 What is a method for the transfer of thermal energy through a vacuum?

- A conduction
- B convection
- C insulation
- D radiation

33 A ray of light strikes a plane mirror.

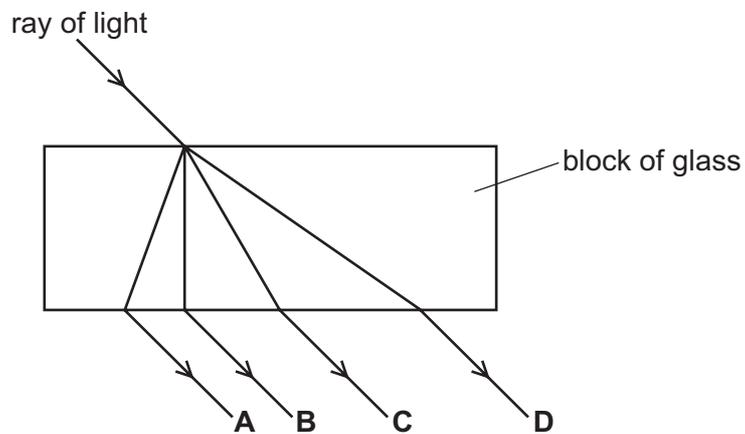


What is the angle of reflection of the ray?

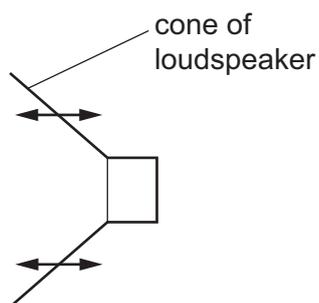
- A 150°
- B 90°
- C 60°
- D 30°

34 The diagram shows a ray of light in air striking a rectangular block of glass.

Which labelled arrow shows the path of the light into and out of the block?

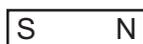


- 35 The diagram shows a loudspeaker. The cone of the loudspeaker vibrates backwards and forwards in the direction of the arrows. These vibrations produce a sound wave in the air.



Which change results in the loudspeaker producing sound with a higher pitch?

- A** increasing the distance moved by the cone during each vibration
B increasing the time taken for each vibration
C decreasing the distance moved by the cone during each vibration
D decreasing the time taken for each vibration
- 36 The diagrams P, Q, R and S show four pairs of bar magnets.

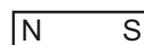


P

Q



R



S

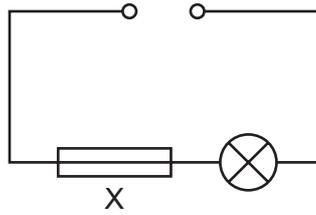
For which two pairs of magnets is there a force of attraction between the magnets?

- A** P and Q **B** P and S **C** Q and R **D** R and S
- 37 There is a current of 4.0 A in a resistor. The voltage across the resistor is 8.0 V.

What is the resistance of the resistor?

- A** 0.50 Ω **B** 2.0 Ω **C** 12 Ω **D** 32 Ω

38 Component X protects the circuit shown in the diagram.



What is component X?

- A fixed resistor
- B fuse
- C switch
- D variable resistor

39 The mass of a radioactive isotope in a sample is 720 g. The half-life of the isotope is 4.0 hours.

Which mass of the isotope remains undecayed after 12 hours?

- A 60 g
- B 90 g
- C 180 g
- D 240 g

40 Which row shows a dwarf planet and an object that orbits a planet?

	dwarf planet	object that orbits a planet
A	Mercury	moon
B	Mercury	asteroid
C	Pluto	moon
D	Pluto	asteroid

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