



Cambridge IGCSE™

COMBINED SCIENCE**0653/12**

Paper 1 Multiple Choice (Core)

October/November 2020**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.

INFORMATION

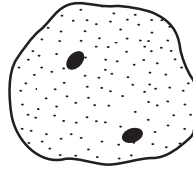
- The total mark for this paper is 40.
- Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
- Any rough working should be done on this question paper.
- The Periodic Table is printed in the question paper.

This document has **16** pages. Blank pages are indicated.

- 1 A plant is placed next to a window. After a few days, its leaves face the light.

Which characteristic is this displaying?

- A excretion
 - B nutrition
 - C respiration
 - D sensitivity
- 2 The diagram shows a cell from an animal's liver.



In what way does this cell differ from a typical animal cell?

- A It contains a central vacuole.
 - B It contains cytoplasm.
 - C It contains two nuclei.
 - D It has a cell wall.
- 3 Particles move from one area to another by diffusion.

Which row is correct about this movement?

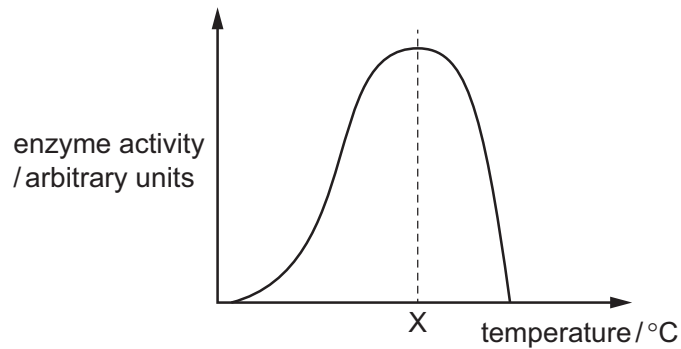
	concentration of particles in area from which they move	concentration of particles in area to which they move	movement of molecules
A	high	high	in a pattern
B	high	low	random
C	low	high	random
D	low	low	in a pattern

- 4 A student has samples of food and wants to test them for starch.

What should the student use to do this?

- A Benedict's solution
- B iodine solution
- C limewater
- D water and ethanol

- 5 The diagram shows how the activity of an enzyme changes with temperature.



This enzyme works in the human body.

What is the most likely value of temperature X?

- A 10°C
 - B 40°C
 - C 70°C
 - D 100°C
- 6 Corals are animals found in the sea. They can only survive if they live in a close relationship with algae. Algae can photosynthesise.

What do the algae produce that corals can use to survive?

	carbon dioxide	chlorophyll	glucose	oxygen
A	✓	✓	x	x
B	✓	x	x	✓
C	x	✓	✓	x
D	x	x	✓	✓

7 Some undigested food passes out of the digestive system as faeces.

What is this process?

- A absorption
- B digestion
- C egestion
- D ingestion

8 Which breakdown processes occur inside cells, and which occur outside cells?

	large molecules to small molecules for absorption	breakdown of glucose to release energy
A	inside	inside
B	inside	outside
C	outside	inside
D	outside	outside

9 Which blood vessel carries blood from the heart to the lungs?

- A aorta
- B pulmonary artery
- C pulmonary vein
- D vena cava

10 What are the effects of adrenaline on the human body?

	breathing rate	pulse rate
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

11 Which row describes asexual reproduction?

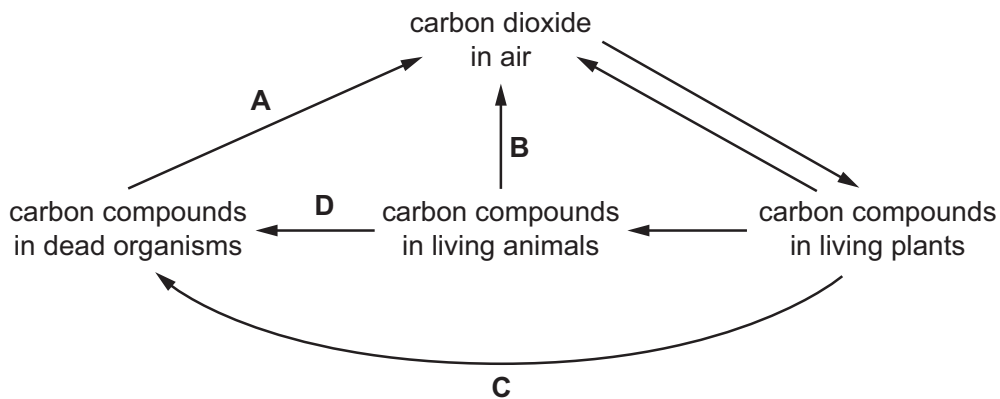
	number of parents	a zygote is produced	offspring identical to the parent
A	1	no	yes
B	1	yes	no
C	2	no	yes
D	2	yes	no

12 On which part of a flower is pollen deposited during pollination?

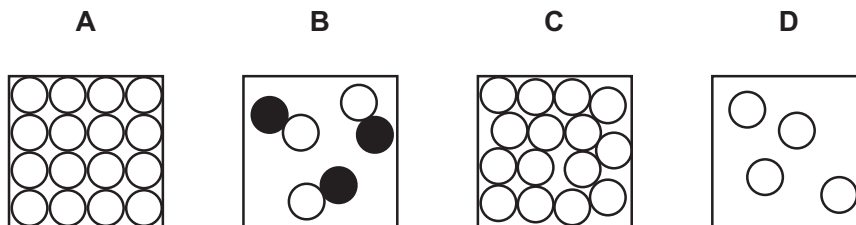
- A** ovary
- B** stamen
- C** stigma
- D** style

13 The diagram shows part of the carbon cycle.

Which arrow represents respiration by decomposers?

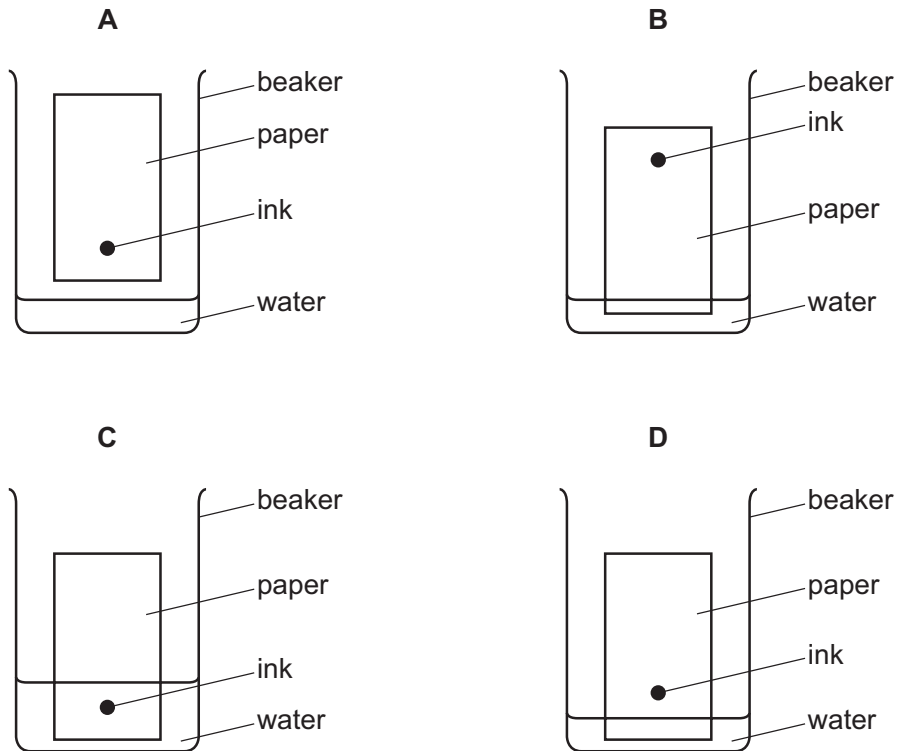


14 Which diagram represents particles in a gaseous element?



15 Chromatography separates ink into different colours.

Which diagram shows how the apparatus is set up?



16 Which processes are physical changes?

- 1 burning methane gas
- 2 dissolving sugar in water
- 3 evaporating ethanol
- 4 melting an ice cube
- 5 rusting of iron

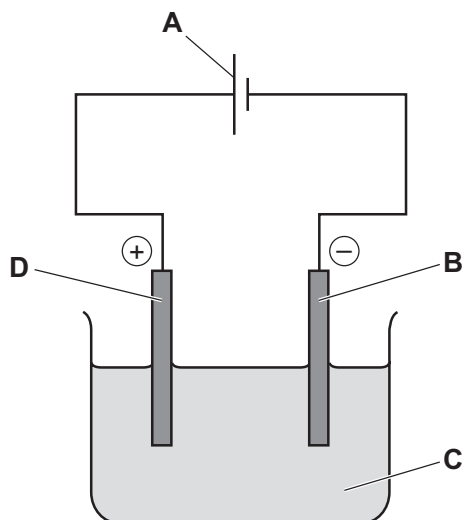
A 1, 3 and 4 **B** 1, 4 and 5 **C** 2, 3 and 4 **D** 2, 3 and 5

17 Which equation for the complete combustion of propane, C_3H_8 , is correct?

- A** $C_3H_8 + 2O_2 \rightarrow 3C + 4H_2O$
- B** $2C_3H_8 + 3O_2 \rightarrow 6CO + 8H_2$
- C** $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$
- D** $C_3H_8 + 3O_2 \rightarrow 3CO_2 + 4H_2$

18 The diagram shows the electrolysis of molten lead(II) bromide.

Which label shows the cathode?



19 Which temperature changes occur during exothermic and endothermic reactions?

	exothermic	endothermic
A	decreases	increases
B	decreases	no change
C	increases	decreases
D	increases	no change

20 Magnesium reacts with zinc oxide to form magnesium oxide and zinc.

Which substance is reduced in this reaction?

- A** magnesium
- B** magnesium oxide
- C** zinc
- D** zinc oxide

21 Dilute hydrochloric acid is tested with universal indicator and with calcium carbonate.

Which row shows the results?

	pH	reaction with calcium carbonate
A	2	a colourless gas is given off
B	2	no reaction
C	10	a colourless gas is given off
D	10	no reaction

22 Acid X reacts with metal Y.

A colourless gas is given off and a pale green solution is produced.

Two tests are carried out on the solution.

test	reagent(s) added	result
1	aqueous silver nitrate and nitric acid	white precipitate
2	aqueous sodium hydroxide	green precipitate

What are acid X and metal Y?

	acid	metal
A	hydrochloric	iron
B	hydrochloric	zinc
C	sulfuric	iron
D	sulfuric	zinc

23 Which row describes a Group I element?

	metal or non-metal	reaction with water
A	metal	fast reaction
B	metal	no reaction
C	non-metal	fast reaction
D	non-metal	no reaction

24 Substance X is a coloured solid.

Substance X acts as a catalyst for the reaction between zinc and dilute sulfuric acid.

Molten X can be electrolysed.

What is X?

- A a Group I compound
- B a Group I metal
- C a transition metal compound
- D a transition metal

25 Which method is used to extract copper from copper(II) oxide?

- A dissolving copper(II) oxide in hydrochloric acid and then filtering
- B dissolving copper(II) oxide in water and then filtering
- C heating the copper(II) oxide
- D heating the copper(II) oxide mixed with carbon

26 Which processes are used in water treatment?

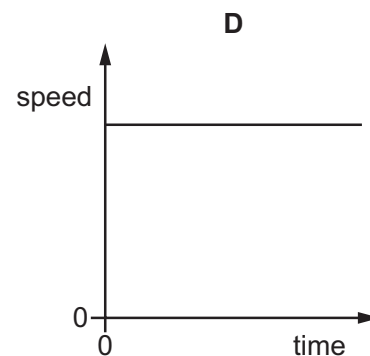
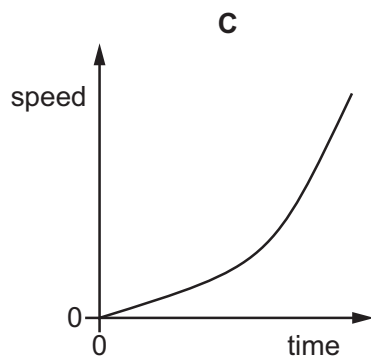
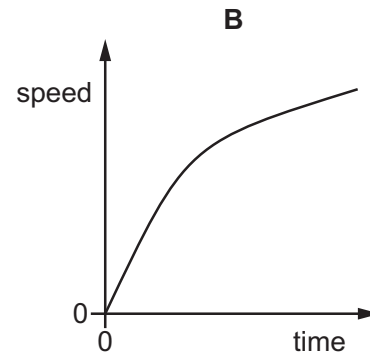
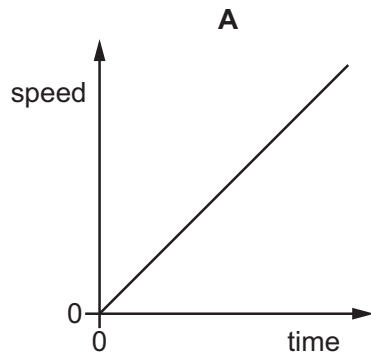
- 1 chlorination
- 2 cracking
- 3 filtration

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

27 Which statement describes a hydrocarbon?

- A a compound that burns to form carbon dioxide and hydrogen
- B a compound that contains carbon and hydrogen only
- C a compound that only contains ionic bonds
- D a compound that reacts easily with metals

28 Which speed–time graph represents motion for which the acceleration is constant but **not** zero?



29 A solid metal cube of side 5.0 cm has a mass of 250 g.

What is the density of the metal?

- A** 0.50 g/cm³ **B** 2.0 g/cm³ **C** 10 g/cm³ **D** 50 g/cm³

30 A car powered by a petrol (gasoline) engine is driven along a horizontal road.

How is energy stored in the petrol and what form of energy does the car have because it is moving?

	energy in petrol	energy of moving car
A	chemical potential	gravitational potential
B	chemical potential	kinetic
C	electrical	gravitational potential
D	electrical	kinetic

31 The molecules of a liquid are close together.

What are other features of the molecules in a liquid?

- A They are arranged in a regular pattern but change positions with each other.
- B They are arranged in a regular pattern and vibrate about fixed positions.
- C They are arranged randomly and change positions with each other.
- D They are arranged randomly and vibrate about fixed positions.

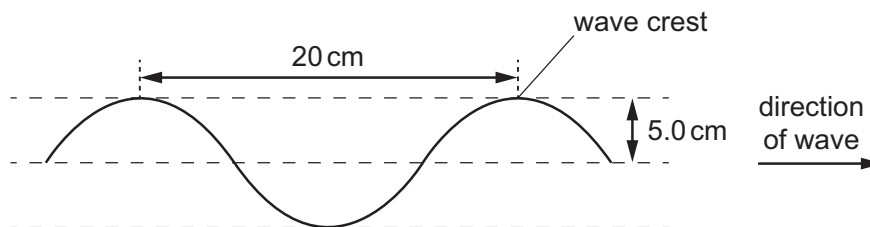
32 In which states of matter can convection occur?

	in a solid	in a liquid	in a gas
A	no	no	yes
B	no	yes	yes
C	yes	no	no
D	yes	yes	no

33 The diagram shows a section of a rope.

Four wave crests pass a point on the rope every second.

Each wave crest travels 80 cm in one second.

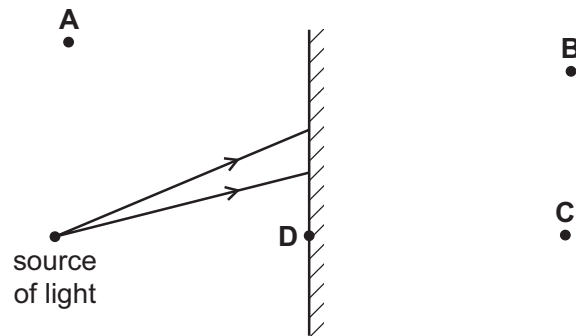


What is the speed of the wave?

- A 4.0 cm/s
- B 5.0 cm/s
- C 20 cm/s
- D 80 cm/s

34 A source of light is placed in front of a plane mirror.

Which labelled point shows the position of the image of the source?



35 Radio waves, visible light and X-rays all travel in a vacuum.

Which wave travels at the greatest speed?

- A radio waves
- B visible light
- C X-rays
- D they all travel at the same speed

36 Which is **not** able to transmit sound waves?

- A a gas
- B a liquid
- C a solid
- D a vacuum

37 A positively charged sphere hangs from an insulating thread.

A student brings a rod close to the sphere.

The sphere moves away from the rod.

Which conclusion can the student draw about the rod?

- A It is charged but it is not possible to know whether it is negatively or positively charged.
- B It is negatively charged.
- C It is not charged.
- D It is positively charged.

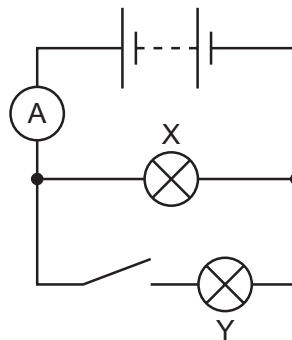
38 A power supply causes a current in a circuit.

The electromotive force (e.m.f.) of the power supply and the resistance of the circuit are both changed.

Which pair of changes **must** result in a smaller current in the circuit?

	e.m.f.	resistance
A	decreased	decreased
B	decreased	increased
C	increased	decreased
D	increased	increased

39 The diagram shows an electric circuit. The switch is closed and both lamps are lit.



Lamp Y is now switched off. Lamp X remains lit.

What happens to the reading on the ammeter?

- A** It decreases to zero.
- B** It decreases but to a value greater than zero.
- C** It stays the same.
- D** It increases.

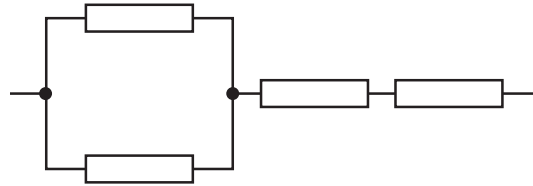
40 The diagrams show four identical resistors connected in different combinations.

Which combination has the greatest combined resistance?

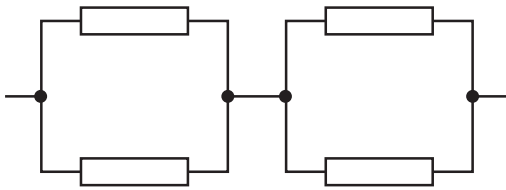
A



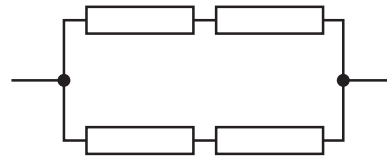
B



C



D



BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which itself is a department of the University of Cambridge.

The Periodic Table of Elements

		Group																	
I	II											III	IV	V	VI	VII	VIII		
		Key																	
		atomic number																	
		atomic symbol																	
		name																	
		relative atomic mass																	
		1																	
		H																	
		hydrogen																	
		1																	
		2																	
		He																	
		helium																	
		4																	
		Be																	
		beryllium																	
		9																	
		Li																	
		lithium																	
		7																	
		Na																	
		sodium																	
		23																	
		Mg																	
		magnesium																	
		24																	
		Ca																	
		calcium																	
		40																	
		K																	
		potassium																	
		39																	
		Sc																	
		scandium																	
		45																	
		Ti																	
		titanium																	
		48																	
		V																	
		vanadium																	
		51																	
		Cr																	
		chromium																	
		52																	
		Mn																	
		manganese																	
		55																	
		Fe																	
		iron																	
		56																	
		Co																	
		cobalt																	
		59																	
		Ni																	
		nickel																	
		59																	
		Cu																	
		copper																	
		64																	
		Zn																	
		zinc																	
		65																	
		Ga																	
		gallium																	
		70																	
		Ge																	
		germanium																	
		73																	
		As																	
		arsenic																	
		75																	
		Se																	
		selenium																	
		79																	
		Br																	
		bromine																	
		80																	
		Kr																	
		krypton																	
		84																	
		Rb																	
		rubidium																	
		85																	
		Sr																	
		strontium																	
		88																	
		Y																	
		yttrium																	
		89																	
		Zr																	
		zirconium																	
		91																	
		Nb																	
		niobium																	
		93																	
		Mo																	
		molybdenum																	
		96																	
		Tc																	
		technetium																	
		101																	
		Ru																	
		ruthenium																	
		101																	
		Rh																	
		rhodium																	
		103																	
		Pd																	
		palladium																	
		106																	
		Ag																	
		silver																	
		108																	
		Au																	
		gold																	
		197																	
		Pt																	
		platinum																	
		195																	
		Ir																	
		iridium																	
		192																	
		Os																	
		osmium																	
		190																	
		Hs																	
		hassium																	
		108																	
		Mt																	
		meitnerium																	
		109																	
		Ds																	
		darmstadtium																	
		110																	
		Rg																	
		roentgenium																	
		111																	
		Cn																	
		copernicium																	
		112																	
		Fl																	
		flerovium																	
		114																	
		Lv																	
		livermorium																	
		116																	
		Po																	
		polonium																	
		209																	
		Bi																	
		bismuth																	
		83																	
		At																	
		astatine																	
		85																	
		I																	
		iodine																	
		127																	
		Te																	
		tellurium																	
		128																	