Cambridge Assessment International Education

Cambridge IGCSE™

CO-ORDINATED SCIENCES **0654/11**

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.

[Turn over

1 Lions are carnivores that chase, catch and eat zebra.

While still chasing zebra, which characteristic of living organisms is **not** exhibited by the lion?

A movement

B nutrition

C respiration

D sensitivity

2 Which structure in a plant cell makes organic nutrients?

A cell membrane

B cell wall

C chloroplast

D nucleus

3 Nutrient molecules are made up from smaller molecules. Nutrients can be identified by food tests.

Which row is true for a protein?

	smaller molecules	test which gives a positive result
A	amino acids	Benedict's test
B	amino acids	biuret test
C	sugars	Benedict's test
D	sugars	biuret test

4 A mixture of starch and saliva was set up at four different temperatures. Each mixture was tested with iodine solution after 15 minutes and again after 30 minutes.

The results are shown in the table.

temperature / °C	colour with iodine solution	
	15 minutes	30 minutes
0	blue-black	blue-black
15	blue-black	brown
35	brown	brown
95	blue-black	blue-black

What do the results suggest?

A The enzyme in saliva is inactive at 95 °C.

B The enzyme in saliva is slow to work at 35 °C.

C The enzyme in saliva works equally well at 15 °C and 35 °C.

D The enzyme in saliva works faster at higher temperatures.

5 Which are the products of photosynthesis in a green plant?

A carbon dioxide and water

B glucose and carbon dioxide

C oxygen and glucose

D oxygen and water

6 Which are minerals?

1 calcium

2 fibre

3 iron

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

[Turn over

7 Under which conditions will transpiration from a plant be fastest?

	temperature	humidity
A	high	high
B	high	low
C	low	high
D	low	low

8 Which process uses energy?

A cell division

B diffusion

C osmosis

D respiration

9 A plant shoot grows towards a light source.

This is an example of what?

A gravitropism

B homeostasis

C transpiration

D phototropism

10 What is produced by the fusion of the nuclei of two gametes?

A embryo

B fetus

C ovum

D zygote

11 Which term is used to describe an individual with two of the same allele for a characteristic?

A genotype

B heterozygous

C homozygous

D phenotype

12 The diagram shows a food chain.

grass → rabbit → fox → flea

Which statement is correct?

A The grass is a primary consumer.

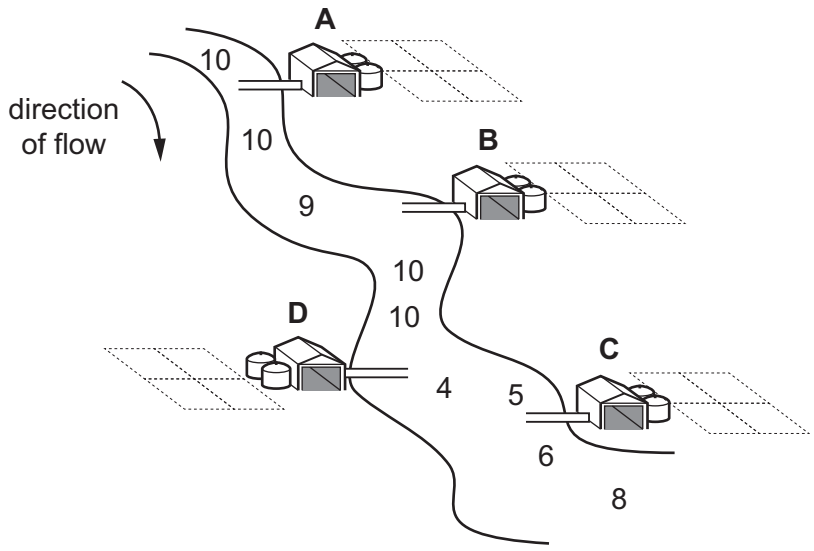
B The rabbit is a secondary consumer.

C The fox is a tertiary consumer.

D The flea is a tertiary consumer.

13 The diagram shows a river and four farms. The numbers in the river show relative oxygen concentrations.

From which farm is untreated sewage leaking into the river?



14 Atoms are the smallest parts of ……1…… .

When atoms of the same type chemically join together, a ……2…… is formed.

When different types of atom chemically join together, they form ……3……. .

Which words complete gaps 1, 2 and 3?

	1	2	3
A	elements	molecule	compounds
B	elements	molecule	mixtures
C	molecules	compound	mixtures
D	molecules	mixture	compounds

[Turn over

15 A sample of water is contaminated with insoluble chalk and a soluble salt.

Which two processes are used to separate the water from the chalk and salt?

A distillation and chromatography

B distillation and crystallisation

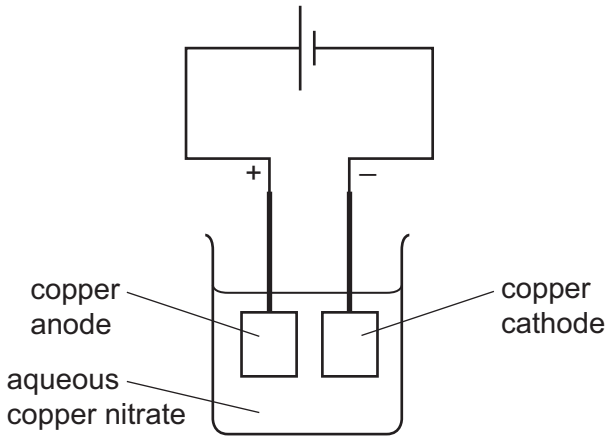
C filtration and chromatography

D filtration and crystallisation

16 Which row describes a covalent compound?

	solubility in water	volatility
A	high	low
B	high	high
C	low	low
D	low	high

17 The diagram shows an electroplating experiment.



Which row shows the change in mass of each electrode?

	anode	cathode
A	decrease	decrease
B	decrease	increase
C	increase	decrease
D	increase	increase

18 Which statement describes the meaning of *exothermic*?

A Heat energy is given out.

B Heat energy is taken in.

C Oxygen is given out.

D Oxygen is taken in.

19 Which word equation represents a redox reaction?

A carbon + copper oxide → copper + carbon dioxide

B hydrochloric acid + potassium hydroxide → potassium chloride + water

C magnesium carbonate → magnesium oxide + carbon dioxide

D sodium sulfate + barium nitrate → barium sulfate + sodium nitrate

20 Which chemical test does **not** produce a precipitate?

A carbon dioxide and limewater

B carbonate ions and dilute hydrochloric acid

C chloride ions and aqueous silver nitrate

D copper(II) ions and aqueous sodium hydroxide

21 Potassium is in Group I of the Periodic Table.

What is a property of potassium?

A It does not react with water.

B It is a liquid.

C It is a non-metal.

D It is a soft metal.

22 Which property is **not** shown by transition elements?

A They can act as catalysts.

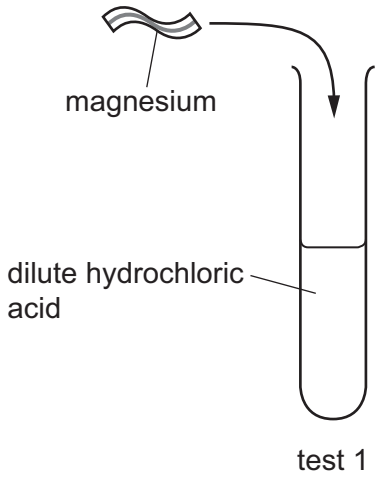
B They form coloured compounds.

C They have high melting points.

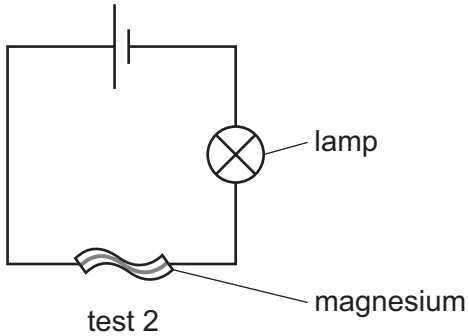
D They have low densities.

[Turn over

23 Magnesium is tested as shown.



test 1



test 2

Which row shows the results of the tests?

	test 1	test 2
A	bubbles	lamp does not light
B	bubbles	lamp lights
C	no bubbles	lamp does not light
D	no bubbles	lamp lights

24 Which gas is an acidic pollutant in air?

A argon

B carbon monoxide

C sulfur dioxide

D water vapour

25 Which process does **not** produce carbon dioxide?

A acid reacting with a metal

B acid reacting with sodium carbonate

C complete combustion of methane

D respiration

26 Methane is a covalent compound.

Which statement about methane is correct?

A It conducts electricity.

B It is a gas at room temperature.

C It is an unsaturated hydrocarbon.

D It is formed from a metal and a non-metal.

27 Poly(ethene) is made from ethene by the process of addition polymerisation.

Which word describes ethene in this process?

A fuel

B catalyst

C monomer

D solvent

28 A man climbs up a vertical cliff that is 60 m high. He takes two hours to reach the top.

What is the average vertical speed of the man?

A 0.0083 m / s

B 0.50 m / s

C 30 m / s

D 120 m / s

29 A hiker has a mass of 80 kg and is carrying a bag of mass 9.0 kg.

The gravitational field strength *g* is 10 N / kg.

What is the combined weight of the hiker and her bag?

A 89 kg **B** 89 N **C** 890 kg **D** 890 N

30 Electricity is generated in power stations. Many power stations use steam to drive turbines.

Which type of power station does **not** use steam?

A chemical energy (fuel) power stations

B geothermal energy power stations

C hydroelectric energy power stations

D nuclear energy power stations

[Turn over

31 Which material is a bad thermal conductor?

A aluminium

B brass

C copper

D wood

32 An object is placed in front of a plane mirror.

What are the characteristics of the image formed?

A same size as the object and inverted top to bottom

B same size as the object and laterally inverted (left to right)

C smaller than the object and inverted top to bottom

D smaller than the object and laterally inverted (left to right)

33 Which list consists of three regions of the electromagnetic spectrum in order of increasing frequency (lowest first)?

A microwaves, radio waves, ultraviolet waves

B microwaves, ultraviolet waves, radio waves

C radio waves, microwaves, ultraviolet waves

D ultraviolet waves, radio waves, microwaves

34 A worker in a quarry stands 0.90 km away from an explosion. She sees the explosion 3.0 s before she hears the sound of the explosion.

Using this information, what value can be determined for the speed of sound?

A 300 m / s **B** 600 m / s **C** 2700 m / s **D** 5400 m / s

35 A bar of soft iron and a bar of steel are held in contact with a strong magnet.

Both bars become magnetised.

The two bars are now moved away from the magnet.

Which statement about the bars is correct?

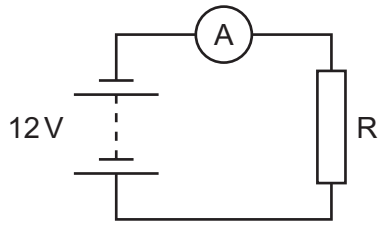
A Both bars easily lose their magnetism.

B Neither of the bars easily loses its magnetism.

C The soft iron bar easily loses its magnetism but the steel bar retains its magnetism.

D The steel bar easily loses its magnetism but the soft iron bar retains its magnetism.

36 A resistor R is connected to a 12 V battery and an ammeter as shown.

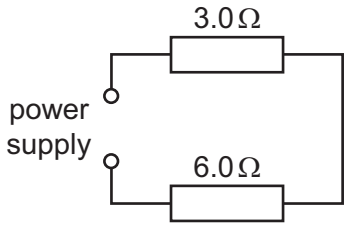


The ammeter reads 6.0 A.

What is the resistance of resistor R?

A 0.50 Ω **B** 2.0 Ω **C** 18 Ω **D** 72 Ω

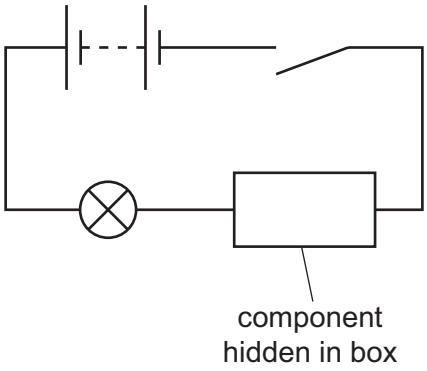
37 A 3.0 Ω resistor and a 6.0 Ω resistor are connected to a power supply as shown.



What is the combined resistance of the two resistors?

A 2.0 Ω **B** 4.5 Ω **C** 9.0 Ω **D** 18 Ω

38 The series circuit shown includes a single component hidden in a box. The switch is open.



The switch is now closed and the lamp lights briefly before going off.

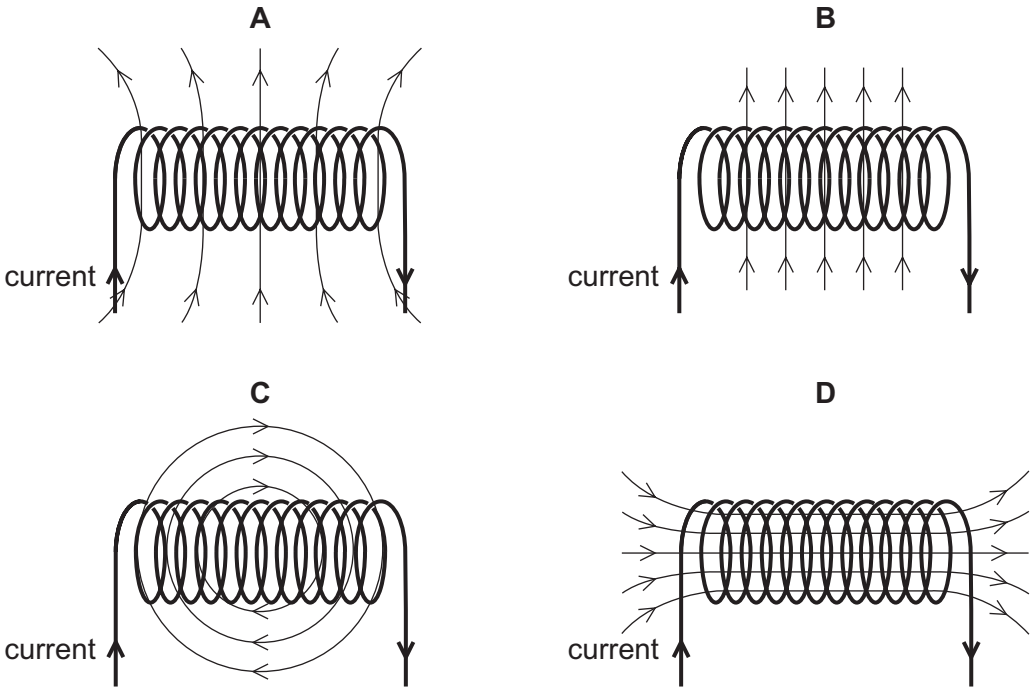
The switch is now opened, and then closed again. This time the lamp does **not** light.

Which symbol represents the component in the box?

A **B** **C** **D**

39 A solenoid carrying a current produces a magnetic field.

Which diagram shows the magnetic field pattern?



40 Which type of radiation has the greatest ionising effect?

A infrared rays

B α-particles

C β-particles

D γ-rays

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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 –		114 Fl flerovium –		116 Lv livermorium –		

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.).