

1. Substance L melts at $-7\text{ }^{\circ}\text{C}$ and is a brown liquid at room temperature. Which temperature is the boiling point of pure L?

A $-77\text{ }^{\circ}\text{C}$

B $-7\text{ }^{\circ}\text{C}$ to $+7\text{ }^{\circ}\text{C}$

C $59\text{ }^{\circ}\text{C}$

D $107\text{ }^{\circ}\text{C}$ to $117\text{ }^{\circ}\text{C}$

2. A student is given a mixture of barium sulfate, copper(II) sulfate and water. The table shows information about barium sulfate and copper(II) sulfate.

substance	solubility in water	state at room temperature
barium sulfate	insoluble	solid
copper(II) sulfate	soluble	solid

How does the student obtain copper(II) sulfate crystals from the mixture?

A crystallisation followed by distillation

B crystallisation followed by filtration

C distillation followed by crystallisation

D filtration followed by crystallisation

3. What is the nucleon number of an atom?

A the number of electrons, neutrons and protons in the nucleus

B the number of neutrons and protons in the nucleus

C the number of neutrons in the nucleus

D the number of protons in the nucleus

4. Caesium, Cs, is an element in Group I of the Periodic Table. When caesium reacts it forms a positive ion, Cs^+ . How is a caesium ion formed?

A A caesium atom gains a proton.

B A caesium atom gains an electron.

C A caesium atom loses an electron.

D A caesium atom shares an electron.

5. Which compounds have the empirical formula CH_2O ?

i. methanal

ii. ethanoic acid

iii. methyl methanoate

A. Only i & ii are correct

B. Only ii & iii are correct

C. Only i is correct

D. All are correct

6. Which statement about electrolysis reactions is correct?

A When concentrated aqueous sodium chloride is electrolysed, sodium forms at the cathode.

B When concentrated hydrochloric acid is electrolysed, a green gas forms at the cathode.

C When dilute sulfuric acid is electrolysed, a colourless gas forms at both electrodes.

D When molten lead(II) bromide is electrolysed, lead forms at the anode.

7. Statement 1 Hydrogen is used as a fuel.

Statement 2 When hydrogen burns in the air to form water, heat energy is produced.

Which is correct?

A Both statements are correct and statement 2 explains statement 1.

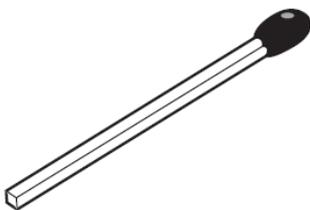
B Both statements are correct but statement 2 does not explain statement 1.

C Statement 1 is correct but statement 2 is incorrect.

D Statement 2 is correct but statement 1 is incorrect.

8. The diagram shows a match. By striking the match, a chemical reaction takes place.

Which row describes the chemical reaction? **C**



	type of reaction	reason
A	endothermic	because energy is given out as the match burns
B	endothermic	because energy is used to strike the match
C	exothermic	because energy is given out as the match burns
D	exothermic	because energy is used to strike the match

9. Magnesium carbonate was reacted with dilute hydrochloric acid in a conical flask. The conical flask was placed on a balance and the mass of the conical flask and contents was recorded as the reaction proceeded.

During the reaction, carbon dioxide gas was produced.

The reaction was done at two different temperatures.

Which row is correct? **A**

	change in mass	temperature at which the mass changed more quickly
A	decrease	higher temperature
B	decrease	lower temperature
C	increase	higher temperature
D	increase	lower temperature

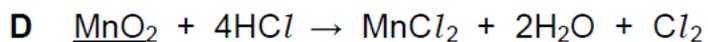
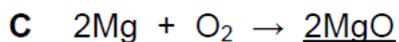
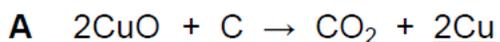
10. Separate samples of anhydrous copper (II) sulfate and hydrated copper (II) sulfate are heated.



Which row shows the correct colour changes? **B**

	anhydrous copper(II) sulfate	hydrated copper(II) sulfate
A	blue to white	white to blue
B	no change	blue to white
C	white to blue	blue to white
D	white to blue	no change

11. In which equation does oxidation of the underlined substance occur? **B**



12. The Periodic Table lists all the known elements.

Elements are arranged in order of 1 number.

The melting points of Group I elements 2 down the group.

The melting points of Group VII elements 3 down the group.

Which words correctly complete gaps 1, 2 and 3? **C**

	1	2	3
A	nucleon	decrease	increase
B	nucleon	increase	decrease
C	proton	decrease	increase
D	proton	increase	decrease

13. Which statements about Group I and Group VII elements are correct? **D**

1 In Group I, lithium is more reactive than potassium.

2 In Group VII, chlorine is more reactive than fluorine.

	statement 1	statement 2
A	✓	✓
B	✓	x
C	x	✓
D	x	x

14. Metals W, X, Y and Z are reacted with dilute hydrochloric acid. The oxides of metals W, X, Y and Z are heated with carbon. The results are shown.

reaction	W	X	Y	Z
metal + dilute hydrochloric acid	fizzing	fizzing	violent fizzing	no reaction
metal oxide + carbon + heat	no reaction	metal produced	no reaction	metal produced

What is the order of reactivity of the metals? **A**

	most reactive	→		least reactive
A	Y	W	X	Z
B	Y	X	W	Z
C	Z	W	X	Y
D	Z	X	W	Y

15. Which formula represents an alkene?

A CH₄

B C₂H₄

C C₂H₆

D C₂H₅OH

16. The diagram shows the pH values of the soil in two parts of a garden, X and Y.



Lime is used to neutralise the soil in one part of the garden.

To which part of the garden should the lime be added and why? **D**

	part of the garden	because lime is
A	X	acidic
B	X	basic
C	Y	acidic
D	Y	basic

17 Three chemical reactions are shown.

- 1. catalytic addition of steam to ethene**
- 2. combustion of ethanol**
- 3. fermentation of glucose**

In which of the reactions does the relative molecular mass of the carbon-containing compound decrease?

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

18 The list gives four experiments done with calcium carbonate.

- 1. acid added**
- 2. alkali added**
- 3. heated strongly**
- 4. water added**

Which experiments produced carbon dioxide?

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

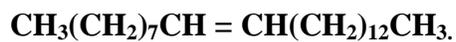
19. Four physical changes are listed.

- 1. condensation**
- 2. evaporation**
- 3. freezing**
- 4. sublimation**

In which changes do the particles move further apart?

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

20. The sex-attractant of the house-fly is muscalure, with the following formula.



Which statements about muscalure are correct?

i. It will decolourise aqueous bromine.

ii. It will be oxidised by cold aqueous alkaline KMnO_4 to give a diol.

iii. It will be optically active.

A. Only i & ii are correct

B. Only ii & iii are correct

C. Only i is correct

D. All are correct