1 Three students, X, Y and Z, were told that solid P reacts with dilute acids and also conducts electricity.

The table shows the students' suggestions about the identity of P.

X	Y	Z
copper	iron	graphite

Which of the students are correct?

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

2 Which property is **not** considered a typical metallic property?

A good conductor of heat

B low melting point

C malleable (can be hammered into shape)

D strong

3 Some properties of substance X are listed.

- It conducts electricity when molten.
- It has a high melting point.
- It burns in oxygen and the product dissolves in water to give a solution with pH 11.

What is X?

A a covalent compound

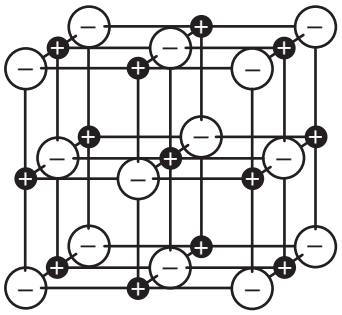
B a macromolecule

C a metal

D an ionic compound

4 Which diagram shows the structure of an alloy?

A



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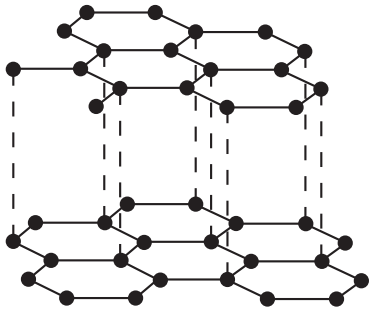

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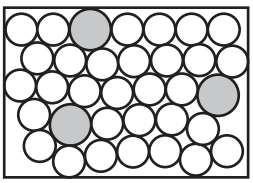

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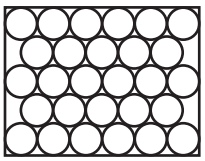


5 Which statement is true for **all** metals?

A Their atoms lose one or more electrons when they react.

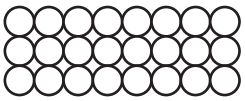
B They are brittle.

C They do not conduct electricity when solid.

D They melt at low temperatures when they are heated.

6 Which diagram represents an alloy?

A



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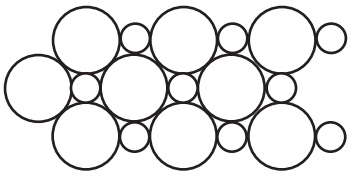

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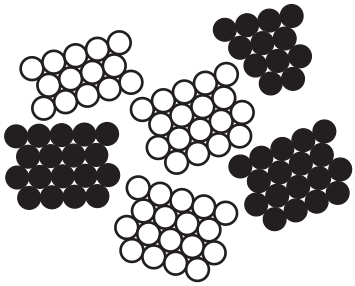

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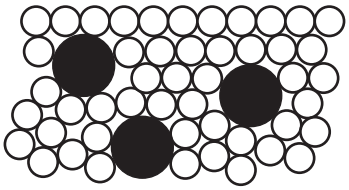
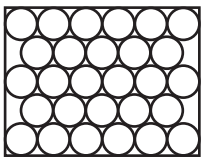
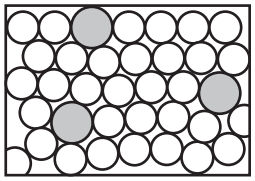


7 The diagrams show the structure of two substances used to make electrical conductors.

X



Y



Which statement correctly describes X and Y?

A X is a pure metal and Y is a compound.

B X is a pure metal and Y is an alloy.

C X is a solid and Y is a liquid.

D X is harder and stronger than Y.

8 Which statement is correct for **all** metals?

A conduct electricity when molten

B gain electrons when they form ions

C have a low density

D have a low melting point

9 Aluminium is the most common metal in the Earth's crust.

Which is **not** a property of aluminium?

A low density

B resistance to corrosion

C good conductor of electricity

D poor conductor of heat

10 Which metal is commonly used to form alloys with a non-metallic element?

A copper

B iron

C magnesium

D zinc

11 Some properties of four elements W, X, Y and Z are listed.

1 W melts at 1410 °C and forms an acidic oxide.

2 X has a high density and is easily drawn into wires.

3 Y acts as a catalyst and its oxide reacts with acids.

4 Z is a red-brown solid used to make alloys.

Which of the elements are metals?

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

12 M is a shiny silver metal. It has a melting point of 1455 °C. Many of its compounds are green.

What is metal M?

A aluminium

B copper

C mercury

D nickel

13 Which element is a metal?

	charge on element ion	electrical conductivity
A	negative	low
B	positive	high
C	negative	high
D	positive	low

14 Pure metals conduct electricity and can be hammered into different shapes.

Why are metals sometimes used as alloys?

A Alloys are cheaper than the metals they are made from.

B Alloys are easier to hammer into different shapes.

C Alloys are harder and keep their shape better.

D Alloys conduct electricity better.

15 A substance, X, has the following properties.

1 It has a high melting point.

2 It conducts electricity in the solid and liquid states.

3 It is malleable.

4 It had a high density.

What is X?

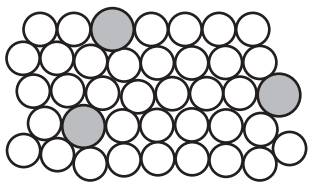
A a ceramic

B copper

C graphite

D sodium chloride

16 The diagram represents the structure of substance S.



What is S?

A an alloy

B an ionic solid

C a macromolecule

D a pure metal

17 Brass is used in electrical equipment.

It contains two ……1…… elements. Together they form ……2…… .

Which words correctly complete gaps 1 and 2?

	1	2
A	metallic	a covalent compound
B	metallic	an alloy
C	non-metallic	a covalent compound
D	non-metallic	an alloy

18 The three statements below about aluminium are all correct.

1 Aluminium has an oxide ore.

2 Aluminium is extracted from its ore by electrolysis.

3 Aluminium is used to make cooking utensils.

In which of these statements can '**aluminium**' be replaced by '**iron**' and still be correct?

	1	2	3
A	✓	✓	✓
B	✓	✓	✗
C	✓	✗	✓
D	✗	✓	✓

19 Statement 1: An aluminium alloy containing a small amount of copper is stronger than pure aluminium.

Statement 2: Alloys are made by mixing molten metals together and allowing them to cool.

Which of the following is true?

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 not correct.

D Statement 2 is correct but statement 1 is not correct.

20 Which property is shown by **all** metals?

A They are extracted from their ores by heating with carbon.

B They conduct electricity.

C They form acidic oxides.

D They react with hydrochloric acid to form hydrogen.

21 Which statement about aluminium is **not** correct?

A It is resistant to corrosion.

B It is strong and has a high density.

C It is used in food containers.

D It is used in the manufacture of aircraft.

22 Which statements about the general properties of metals are correct?

1 conduct electricity when solid

2 form acidic oxides

3 high melting point

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

23 Which statements are correct?

1 Metals are often used in the form of alloys.

2 Stainless steel is an alloy of iron.

3 Alloys always contain more than two metals.

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

24 Which statement is true about **all** metals?

A They are attracted to a magnet.

B They are weak and brittle.

C They may be used to form alloys.

D They react with water.

25 Brass is an alloy of copper and zinc.

Which statement is correct?

A Brass can be represented by a chemical formula.

B Brass is formed by a chemical reaction between copper and zinc.

C The alloy will dissolve completely in dilute hydrochloric acid.

D The zinc in the alloy will dissolve in dilute hydrochloric acid.

26 Which substance is a metal?

	electrical conductivity (solid)	electrical conductivity (molten)
A	high	high
B	high	low
C	low	high
D	low	low

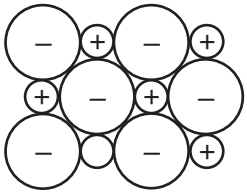
27 Element X is shiny and can be formed into a sheet by hammering.

Which row correctly describes the properties of element X?

	conducts electricity	melts below 25 °C
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

28 Which diagram could represent the structure of an alloy?

A



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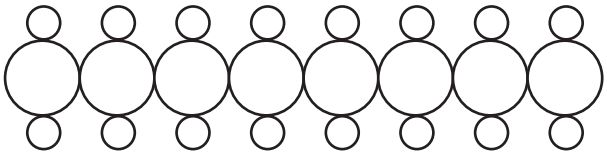

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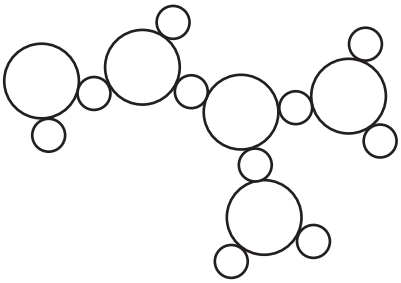

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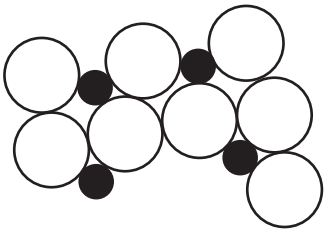


29 Which property do **all** metals have?

A Their boiling points are low.

B Their densities are low.

C They conduct electricity.

D They react with water.

30 Copper, iron and zinc are all used as pure metals.

Which of these three metals are also used in alloys?

	copper	iron	zinc
A	✓	✓	✓
B	✓	✓	✗
C	✗	✓	✓
D	✗	✗	✓

31 Some properties of four elements are shown in the table.

Which element is a metal?

	melting point/°C	electrical conductivity when liquid	electrical conductivity when solid
A	–7	low	low
B	801	high	low
C	1535	high	high
D	3550	low	low

32 Which statement about alloys is **not** correct?

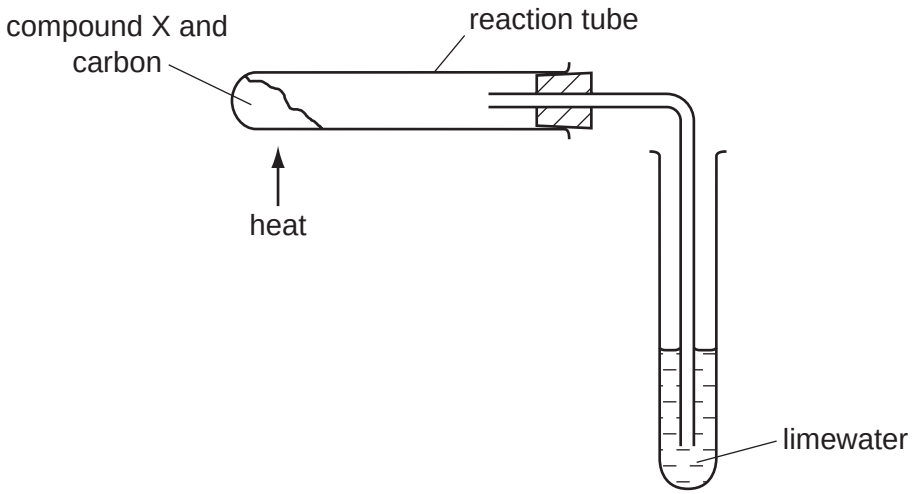
A Alloys are more expensive than the metals they are made from.

B Alloys are mixtures of different metals.

C Alloys are not as strong as the metals they are made from.

D Alloys conduct electricity well.

33 Compound X is heated with carbon using the apparatus shown.



A brown solid is formed in the reaction tube and the limewater turns cloudy.

What is compound X?

A calcium oxide

B copper(II) oxide

C magnesium oxide

D sodium oxide

34 Which property do **all** metals have?

A They are soluble in water.

B They conduct electricity.

C They have high melting points.

D They react with dilute sulfuric acid.

35 An inert atmosphere is needed in a lamp to lengthen the useful life of the metal filament.

Why is argon, rather than helium, used for this purpose?

	argon is more abundant in the air	argon is less dense than helium
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

36 Stainless steel is an alloy of iron and other metals. It is strong and does not rust but it costs much more than normal steel.

What is **not** made from stainless steel?

A cutlery

B pipes in a chemical factory

C railway lines

D saucepans