

- 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?

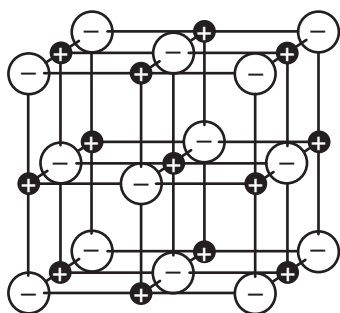
- A** X, Y and Z **B** X only **C** Y only **D** Z only
- 2 Which property is **not** considered a typical metallic property?
- A** good conductor of heat
B low melting point
C malleable (can be hammered into shape)
D strong
- 3 Some properties of substance X are listed.
- It conducts electricity when 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?

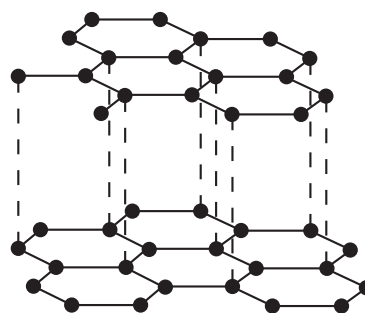
- A** a covalent compound
B a macromolecule
C a metal
D an ionic compound

4 Which diagram shows the structure of an alloy?

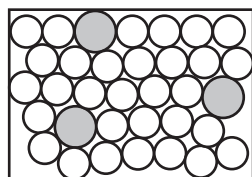
A



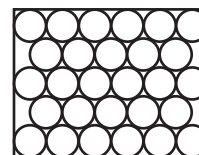
B



C



D



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

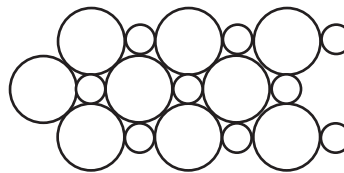
- A Their atoms lose one or more electrons when they react.
- B They are brittle.
- C They do not conduct electricity when solid.
- D They melt at low temperatures when they are heated.

6 Which diagram represents an alloy?

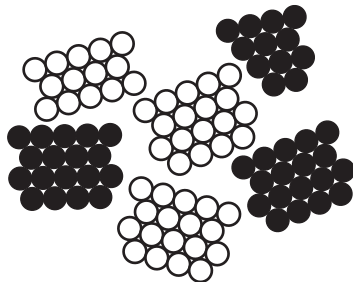
A



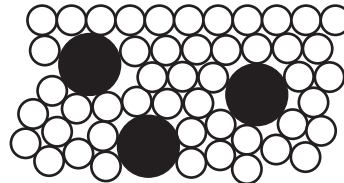
B



C

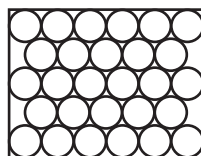


D

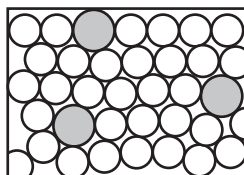


7 The diagrams show the structure of two substances used to make electrical conductors.

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.

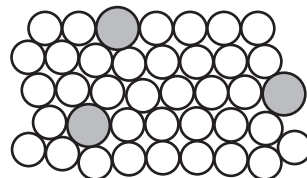
15 A substance, X, has the following properties.

- 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 two1..... elements. Together they form2..... .

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 | ✓ | ✓ | x |
| C | ✓ | x | ✓ |
| D | x | ✓ | ✓ |

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?

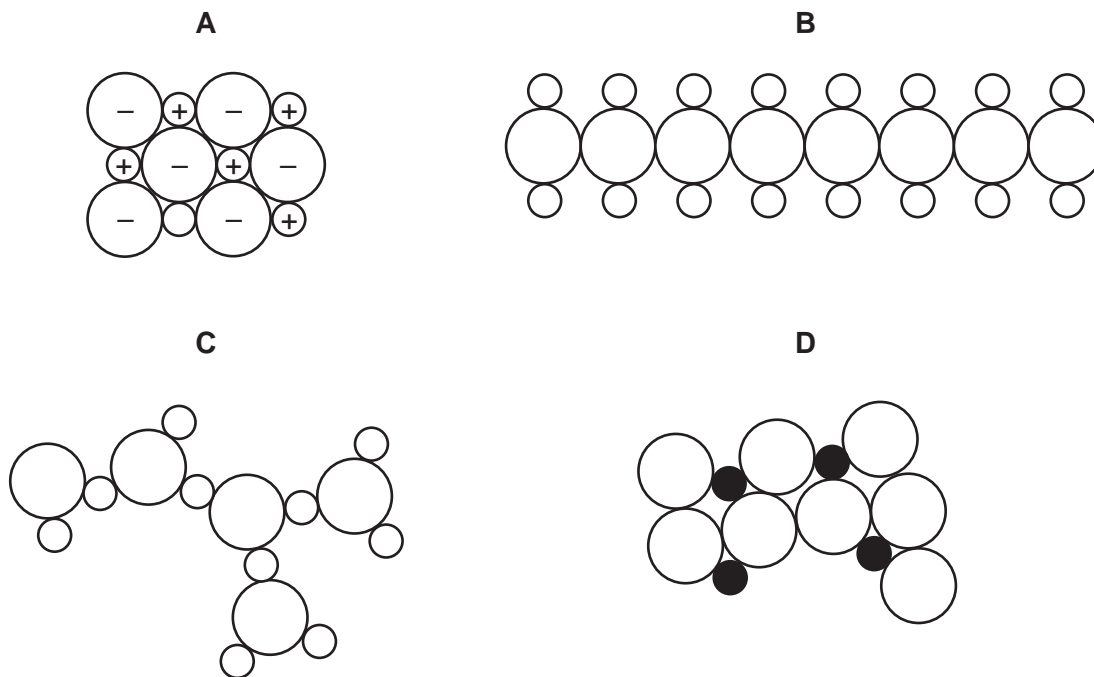
| | electrical conductivity (solid) | electrical conductivity (molten) |
|----------|------------------------------------|-------------------------------------|
| A | high | high |
| B | high | low |
| C | low | high |
| D | low | low |

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 | ✓ | x |
| C | x | ✓ |
| D | x | x |

28 Which diagram could represent the structure of an alloy?



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 | ✓ | ✓ | x |
| C | x | ✓ | ✓ |
| D | x | x | ✓ |

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

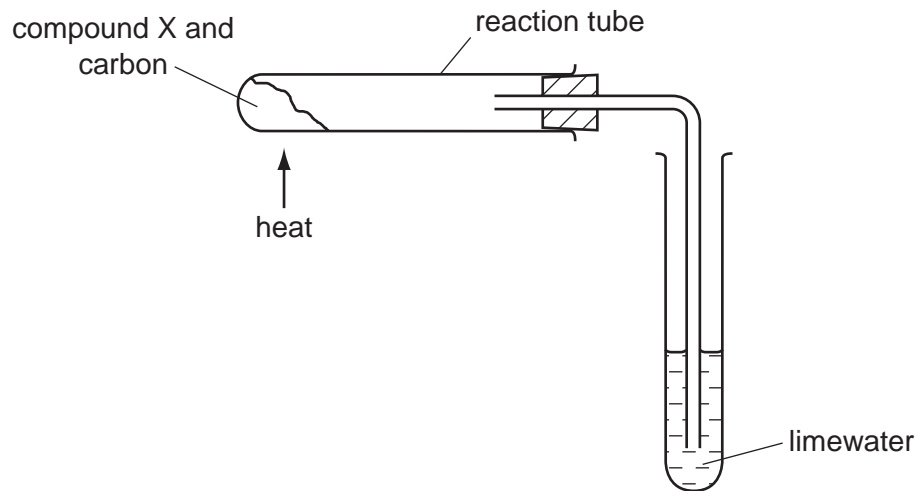
Which element is a metal?

| | 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 | ✓ | x |
| C | x | ✓ |
| D | x | x |

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