

Paper 1

Answer **all** questions. Each question is followed by four options, **A, B, C** and **D**. For each question, choose **one** answer only.

1. Which of the following statements is **true** about the effect of heat on mineral compounds found in the Earth's crust?
- A** Metal sulphide will decompose into metal oxide and sulphur dioxide when heated
 - B** All carbonates are very stable and do not decompose by heat
 - C** All metal oxides are not stable towards the effect of heat
 - D** Metal will combine with oxygen to form metal sulphide when heated

2. Which of the following statements is **true** about silicon compounds?

- I** Do react with acid
- II** Do not dissolve in water
- III** Decompose when heated

- A** I and II only
- B** I and III only
- C** II and III only
- D** I, II and III

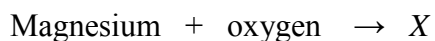
3. When calcium carbonate is heated, it decomposes into substance *X* and gas *Y*. What are substance *X* and gas *Y*?

- | | <i>X</i> | <i>Y</i> |
|----------|------------------|-----------------|
| A | Calcium chloride | Carbon dioxide |
| B | Calcium sulphide | Sulphur dioxide |
| C | Calcium oxide | Carbon dioxide |
| D | Calcium nitrate | Carbon dioxide |

4. Which of the following is **correctly** matched to the use of silicon compounds?

- | | <i>Silicon compound</i> | <i>Use</i> |
|----------|-------------------------|--|
| A | Jade | Cutting glass |
| B | Silica | Making of mortar |
| C | Asbestos | Polishing furniture |
| D | Sodium silica | Electrical insulator in electric irons |

5.



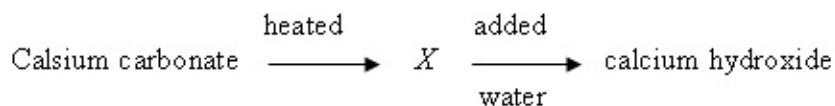
The equation above shows the reaction between magnesium and oxygen. What is product X ?

- A Magnesium chloride
- B Magnesium sulphide
- C Magnesium carbonate
- D Magnesium oxide

6. Which of the following shows a calcium compound and its elements?

<i>Calcium compound</i>	<i>Elements</i>
A Quicklime	Calcium, hydrogen
B Limestone	Calcium, carbon
C Slaked lime	Calcium, hydrogen, oxygen
D Limewater	Calcium, oxygen

7.



The equation above shows the formation of calcium hydroxide. What is X ?

- A Carbon dioxide
- B Limewater
- C Quicklime
- D Limestone

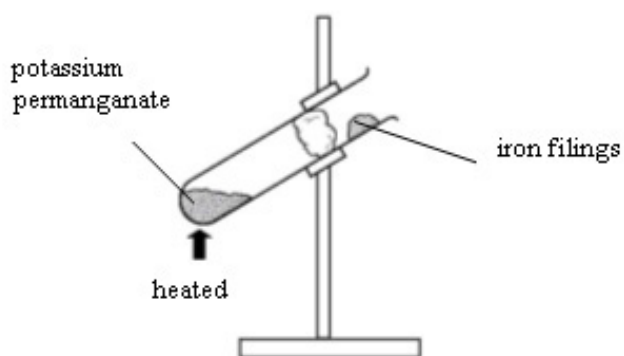
8. Which of the following compounds are hydrocarbon compounds?

- I Petroleum
 - II Coal
 - III Natural gas
- A I and II only
 - B I and III only
 - C II and III only
 - D I, II and III

9. A type of compound, when heated, releases a gas that turns orange acidified potassium dichromate (VI) solution to green. What is the compound?

- A Sulphide
- B Carbonate
- C Oxide
- D Nitrate

10.



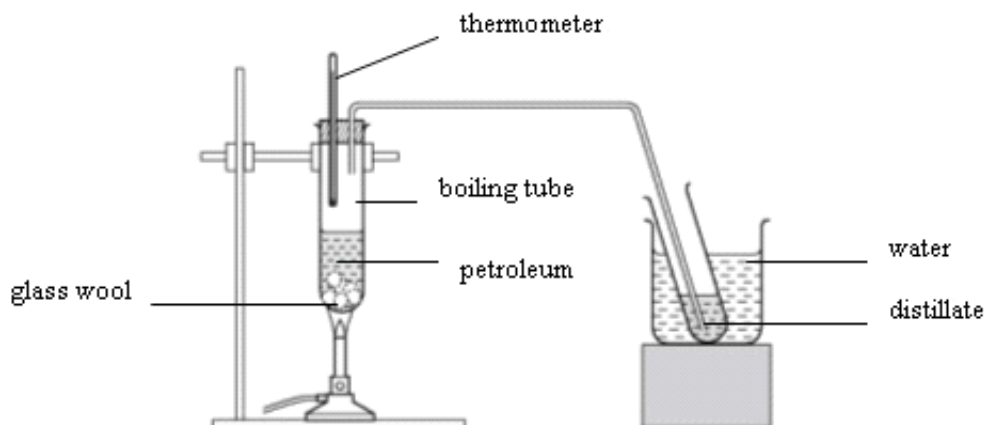
The figure above shows potassium permanganate being heated until the iron filings glow. Which of the following equations represents the reaction that occurs?

- A $\text{Iron} + \text{sulphur} \rightarrow \text{iron sulphide}$
- B $\text{Iron} + \text{oxygen} \rightarrow \text{iron oxide}$
- C $\text{Iron} + \text{oxygen} \rightarrow \text{iron dioxide}$
- D $\text{Iron} + \text{oxygen} \rightarrow \text{iron carbonate}$

11. The second most abundant non-metal element found in the Earth's crust is

- A sulphur
- B carbon
- C oxygen
- D silicon

12.



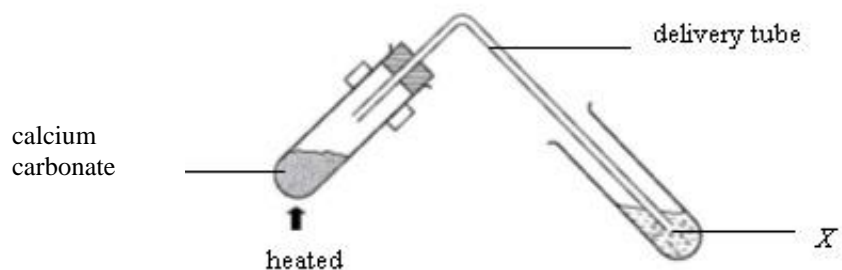
The figure above shows the fractional distillation of petroleum that is carried out in a laboratory. Of the following, which is the characteristic of the petroleum fractions that vapourises first?

- A Difficult to burn; very viscous
- B Very viscous; produces less soot when burning
- C Less viscous; produces less soot when burning
- D Brown in colour; produces soot when burning

13. Fractional distillation is used to separate hydrocarbon compounds in petroleum because all the hydrocarbons have

- A different densities
- B different boiling points
- C different melting points
- D different chemical energies

14.



The figure above shows calcium carbonate being heated and liquid X is used to test the gas released from the decomposition. Liquid X is probably

- I** lime water
 - II** hydrogen bicarbonate solution
 - III** potassium permanganate solution
- A** I and II only
 - B** I and III only
 - C** II and III only
 - D** I, II and III

15.

Elements which form minerals in ore	Metal ore
Iron, oxygen	X
Tin, oxygen	Y
Copper, carbon, oxygen	Z

The table above shows elements which form minerals contained in metal ores X, Y and Z. Which of the following represents the metal ores X, Y and Z?

- | | X | Y | Z |
|----------|-----------|-------------|-------------|
| A | Galena | Bauxite | Marble |
| B | Haematite | Cassiterite | Malachite |
| C | Bauxite | Malachite | Cassiterite |
| D | Marble | Hematite | Galena |

16.

Metal	Observation
<i>P</i>	Glows brightly
<i>Q</i>	Burns brightly
<i>R</i>	Burns dimly
<i>S</i>	Glows dimly

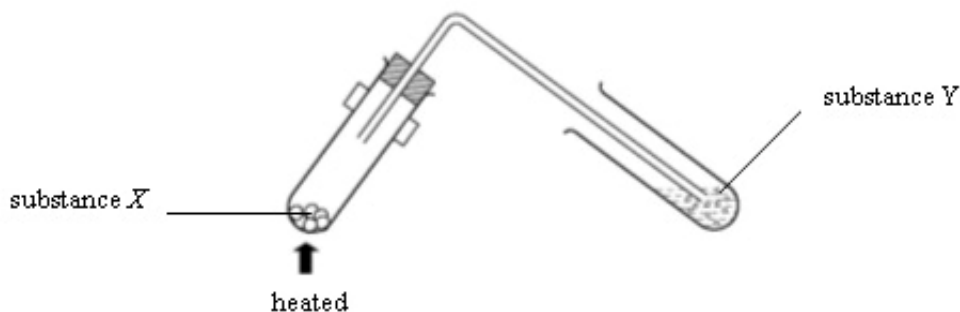
The table above shows the observations for the reaction between metals *P*, *Q*, *R* and *S* with oxygen. Which of the following shows the sequence of reactivity of these metals in ascending order?

- A *Q, R, P, S*
- B *R, Q, S, P*
- C *S, R, Q, P*
- D *S, P, R, Q*

17. The following pairs show metal ores and the metals extracted from them. Which is correctly matched?

- | | <i>Metal ore</i> | <i>Metal</i> |
|---|------------------|--------------|
| A | Bauxite | Iron |
| B | Haematite | Lead |
| C | Cassiterite | Tin |
| D | Malachite | Aluminium |

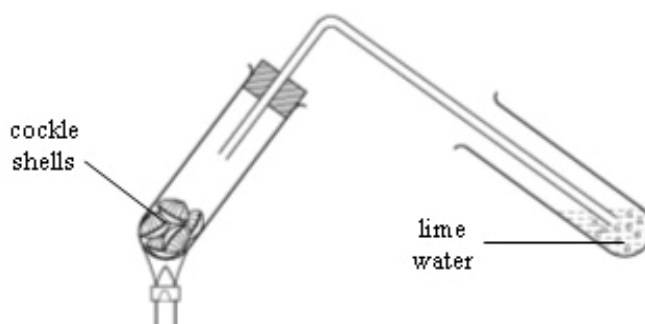
18.



The figure above shows an experiment to study a decomposition reaction. It is known that substance *X* is formed from calcium, carbon and oxygen. Which of the following test materials can be used as substance *Y* to test for gas released during the experiment?

- A Limewater
- C Potassium dichromate solution

Paper 2
Answer the question.



The figure above shows the effect of heat on cockle shells.

(a) (i) What change can be observed in the limewater?

(ii) Explain the change occurs in lime water in (a)(i).

(b) Cockle shells contain calcium carbonate. Write a chemical equation in words to represent the effect of heat on cockle shells.

(c) State **three** elements found in cockle shells.

(d) Give **one** example of other natural substance which can be used to replace the cockle shells in this experiment.

(e) Water is dropped onto heated cockle shells. The solution formed is then tested with red litmus paper. What can be observed of the red litmus paper?

Answers:

Paper 1

1	A	11	D
2	A	12	C
3	C	13	B
4	B	14	A
5	D	15	B
6	C	16	D
7	C	17	C
8	B	18	A
9	A	19	B
10	B	20	A

Paper 2

- (a) (i) It turns cloudy
- (ii) The carbon dioxide that is released reacts with limewater
- (b) Calcium carbonate \rightarrow calcium oxide + carbon dioxide
- (c) Calcium, carbon and oxygen
- (d) Limestone/snail shell/marble
- (e) It turns blue