The Periodic Table – 2022 Nov IGCSE Chemistry 0620

1. Nov/2022/Paper_11,12,13/No.20

Which statement about the Periodic Table is correct?

A Elements in the same group have the same number of electron shells.

B Elements are arranged in order of increasing proton number.

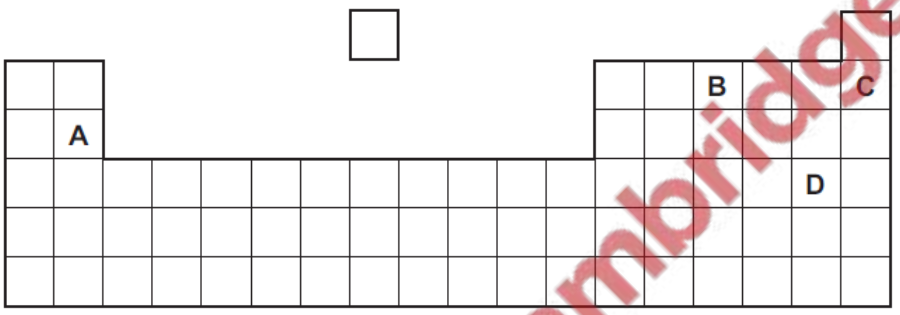
C Metals are on the right and non-metals are on the left.

D The most reactive elements are at the bottom of every group.

2. Nov/2022/Paper_11/No.21

Part of the Periodic Table is shown.

Which element conducts electricity?



3. Nov/2022/Paper_11/No.22

Some information about properties of Group I elements is shown.

element	melting point / °C	density in g / cm^3
lithium	181	0.53
sodium	98	0.97
potassium	X	
rubidium	Y	Z

What are the values for X, Y and Z?

	X	Y	Z
A	63	252	0.26
B	63	39	0.26
C	39	63	1.53
D	63	39	1.53

4. Nov/2022/Paper_12/No.21

Elements J and K are in the same period in the Periodic Table.

J reacts with acids to produce a salt and hydrogen.

K reacts with sodium to form an ionic compound.

Which statement about J and K is correct?

A An atom of J has more electrons than an atom of K.

B J and K are both metals.

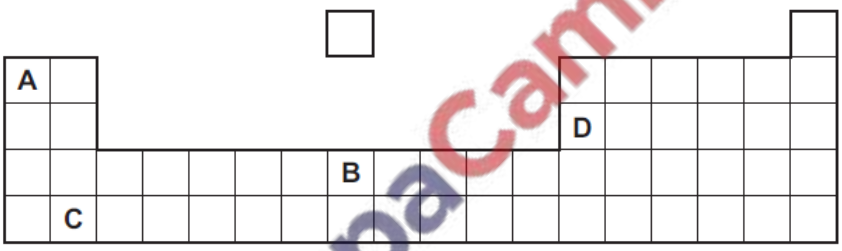
C J and K are both non-metals.

D J is to the left of K in the Periodic Table.

5. Nov/2022/Paper_12/No.22

Part of the Periodic Table is shown.

Which element has a high density, a high melting point and forms a brown oxide?



6. Nov/2022/Paper_12/No.23

Gas G has 10 electrons. Gas H has eight more electrons than gas G. Both gases are monoatomic.

Which statement about G and H is correct?

A Both gases are in the same group of the Periodic Table.

B Both gases are in the same period of the Periodic Table.

C Both gases are very reactive.

D Gas G has a higher atomic mass than gas H.

7. Nov/2022/Paper_13/No.21

Elements E and F are in Group I of the Periodic Table.

E has a higher melting point than F.

Elements J and L are in Group VII of the Periodic Table.

J has a higher density than L.

Which elements have the highest atomic numbers in each group?

A E and J **B** E and L **C** F and J **D** F and L

8. Nov/2022/Paper_13/No.22

What is a characteristic property of a transition element?

A acts as a catalyst

B low density

C low melting point

D non-conductor of electricity

9. Nov/2022/Paper_13/No.23

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Which statement about G and H is correct?

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B Both gases are in the same period of the Periodic Table.

C Both gases are very reactive.

D Gas G has a higher atomic mass than gas H.

10. Nov/2022/Paper_21/No.21

Group II elements show the same trends as Group I elements.

Which statement about elements in Group II is correct?

A The melting point of barium is higher than the melting point of calcium.

B Barium is more reactive than beryllium.

C Strontium would not react with oxygen.

D Magnesium is more dense than barium.

11. Nov/2022/Paper_21/No.22

Some information about properties of Group I elements is shown.

element	melting point / °C	density in g / cm^3
lithium	181	0.53
sodium	98	0.97
potassium	X	
rubidium	Y	Z

What are the values for X, Y and Z?

	X	Y	Z
A	63	252	0.26
B	63	39	0.26
C	39	63	1.53
D	63	39	1.53

12. Nov/2022/Paper_21/No.23

Which statements describe properties of transition elements?

1 They form coloured compounds.

2 They have variable oxidation states.

3 They have low densities.

4 They are volatile.

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

13. Nov/2022/Paper_22/No.21

Strontium displaces magnesium from molten magnesium chloride.

Bromine displaces iodine from aqueous potassium iodide.

Which row describes the change in reactivity down both Group II and Group VII of the Periodic Table?

	reactivity down the group	
	Group II	Group VII
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

14. Nov/2022/Paper_22/No.22

Elements J and K are in the same period in the Periodic Table.

J reacts with acids to produce a salt and hydrogen.

K reacts with sodium to form an ionic compound.

Which statement about J and K is correct?

A An atom of J has more electrons than an atom of K.

B J and K are both metals.

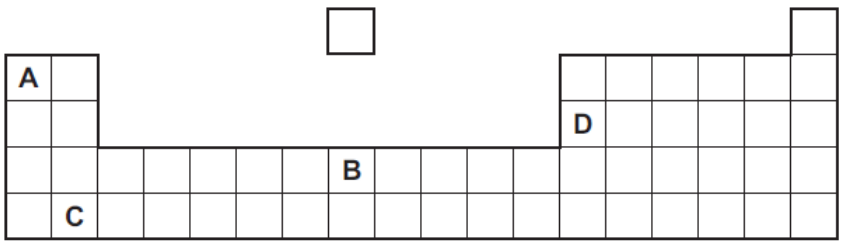
C J and K are both non-metals.

D J is to the left of K in the Periodic Table.

15. Nov/2022/Paper_22/No.23

Part of the Periodic Table is shown.

Which element has a high density, a high melting point and forms a brown oxide?



16. Nov/2022/Paper_23/No.21

Elements E and F are in Group I of the Periodic Table.

E has a higher melting point than F.

Elements J and L are in Group VII of the Periodic Table.

J has a higher density than L.

Which elements have the highest atomic numbers in each group?

A E and J **B** E and L **C** F and J **D** F and L

17. Nov/2022/Paper_23/No.22

Which metal forms ions with one oxidation state?

A aluminium

B chromium

C copper

D iron

18. Nov/2022/Paper_23/No.23

How does the nature of the oxides change across Period 3 from sodium to chlorine?

A basic → amphoteric → acidic

B basic → acidic → amphoteric

C amphoteric → basic → acidic

D acidic → amphoteric → basic

19. Nov/2022/Paper_31/No.4(a)

This question is about halogens.

(a) The table shows some properties of four halogens.

halogen	melting point in °C	boiling point in °C	density at room temperature and pressure in g/cm^3
fluorine	–220	–188	.....
chlorine	.....	–35	0.003
bromine	–7	59	3.12
iodine	114	184	4.93

(i) Complete the table by predicting:

- the melting point of chlorine
- the density of fluorine at room temperature and pressure.

[2]

(ii) Predict the physical state of fluorine at 0 °C.
Give a reason for your answer.

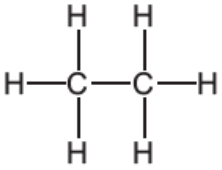
.....

..... [2]

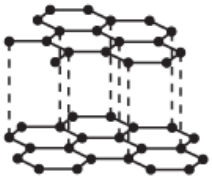
20. Nov/2022/Paper_32/No.1(a)

The structures of seven compounds or elements, **A**, **B**, **C**, **D**, **E**, **F** and **G**, are shown.

A

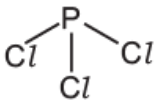


B

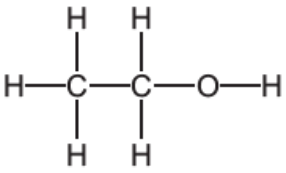


C

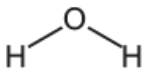
D



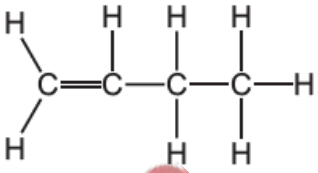
E



F



G



(a) Answer the following questions about these structures.
Each structure may be used once, more than once or not at all.

State which structure, **A**, **B**, **C**, **D**, **E**, **F** or **G**, represents:

(i) a compound that contains atoms of a Group VII element

..... [1]

(ii) an element with a giant covalent structure

..... [1]

(iii) a compound that turns anhydrous copper(II) sulfate blue

..... [1]

(iv) an element that conducts electricity

..... [1]

(v) an unsaturated hydrocarbon.

..... [1]

21. Nov/2022/Paper_32/No.4(a)

This question is about halogens.

(a) The table shows some properties of four halogens.

halogen	melting point in °C	boiling point in °C	density at room temperature and pressure in g/cm^3
chlorine	–101	–35	0.003
bromine	–7	59	3.12
iodine	114	184	.....
astatine	302	.....	6.35

(i) Complete the table by predicting:

- the density of iodine at room temperature and pressure
- the boiling point of astatine.

[2]

(ii) Predict the physical state of bromine at 20 °C.
Give a reason for your answer.

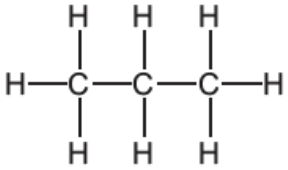
.....

..... [2]

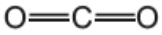
22. Nov/2022/Paper_33/No.1(a)

(a) The structures of seven compounds or elements, **A**, **B**, **C**, **D**, **E**, **F** and **G**, are shown.

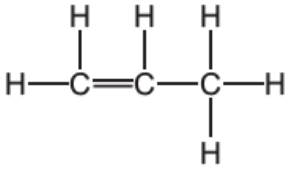
A



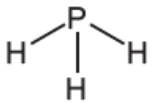
B



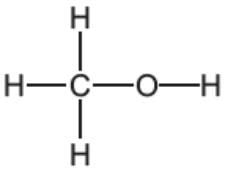
C



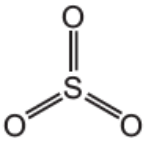
D



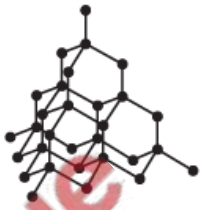
E



F



G



Answer the following questions about these structures.
Each structure may be used once, more than once or not at all.

State which structure, **A**, **B**, **C**, **D**, **E**, **F** or **G**, represents:

(i) a compound that contains an atom of an element in Group V of the Periodic Table

..... [1]

(ii) an element

..... [1]

(iii) a substance that is used for cutting tools

..... [1]

(iv) a compound that is a major contributor to climate change

..... [1]

(v) a saturated hydrocarbon.

..... [1]

23. Nov/2022/Paper_33/No.4(a)

(a) The table shows some properties of four Group I elements.

element	melting point /°C	boiling point /°C	hardness /MPa
lithium	181	1342	5.00
sodium	98	.....	0.70
potassium	63	760	0.36
rubidium	39	686	.....

(i) Complete the table by predicting:
- the boiling point of sodium
- the hardness of rubidium. [2]

(ii) Predict the physical state of potassium at 50 °C.
Give a reason for your answer.

.....

..... [2]

24. Nov/2022/Paper_41/No.1

The names of the elements of Period 2 of the Periodic Table are shown.

lithium beryllium boron carbon nitrogen oxygen fluorine neon

Answer the following questions about these elements.
Each element may be used once, more than once or not at all.

Identify the element which:

(a) is a product of photosynthesis

..... [1]

(b) has an oxide found in clean, dry air

..... [1]

(c) forms a basic oxide with the formula X_2O

..... [1]

(d) is a main component of fertilisers used to improve crop growth

..... [1]

(e) has the highest rate of diffusion at room temperature

..... [1]

(f) produces a red flame in a flame test

..... [1]

(g) has only 5 electrons in each of its atoms

..... [1]

(h) has an oxide responsible for acid rain.

..... [1]

[Total: 8]

25. Nov/2022/Paper_42/No.2(a, b)

Sodium is a reactive metal.

(a) Suggest why sodium is stored under oil.

..... [1]

(b) Sodium burns in air to form sodium oxide, Na_2O.

(i) State the term given to a reaction in which a substance burns.

..... [1]

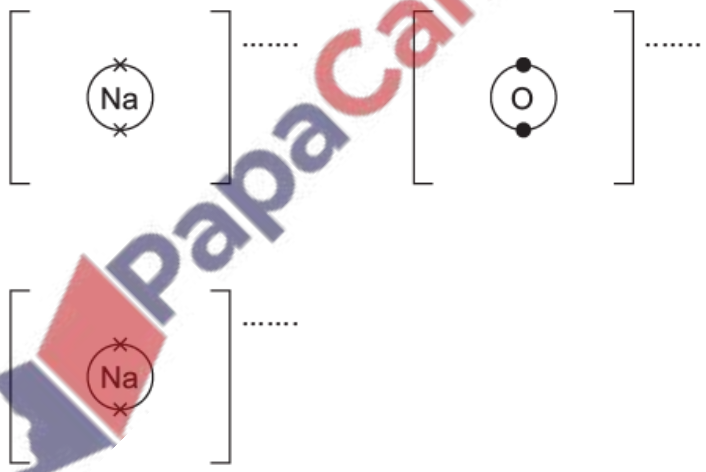
(ii) State the colour of the flame seen when sodium burns.

..... [1]

(iii) Write a chemical equation for the reaction which takes place when sodium burns in air to form sodium oxide.

..... [2]

(iv) Complete the dot-and-cross diagram to show the electron arrangement and charges of the ions in sodium oxide.



[3]

26. Nov/2022/Paper_43/No.2

The table shows the melting points, boiling points and electrical conductivities of six substances, **D**, **E**, **F**, **G**, **H** and **I**.

substance	melting point /°C	boiling point /°C	conducts electricity when solid	conducts electricity when liquid
D	1083	2567	yes	yes
E	–117	79	no	no
F	3550	4827	no	no
G	119	445	no	no
H	–210	–196	no	no
I	801	1413	no	yes

(a) Identify the substance, **D**, **E**, **F**, **G**, **H** or **I**, which is:

(i) a liquid at 25 °C ..... [1]

(ii) a gas at 25 °C ..... [1]

(iii) a solid consisting of simple molecules at 25 °C. ..... [1]

(b) Identify the substance, **D**, **E**, **F**, **G**, **H** or **I**, which is a metal. Give a reason for your choice.

substance .....

reason .....

[2]

(c) Identify the substance, **D**, **E**, **F**, **G**, **H** or **I**, which has a macromolecular structure. Give **two** reasons for your choice.

substance .....

reason 1 .....

reason 2 .....

[3]

(d) Identify the substance, **D**, **E**, **F**, **G**, **H** or **I**, which is an ionic solid. Give a reason for your choice.

substance .....

reason .....

.....

[2]

[Total: 10]