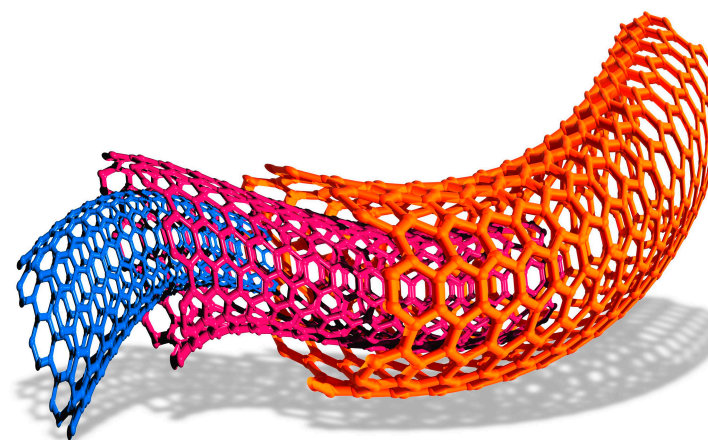




# Interactive Example Candidate Responses

Paper 3 (May / June 2016), Question 1

**Cambridge IGCSE™**  
**Chemistry 0620**



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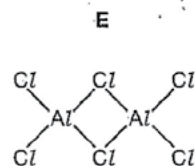
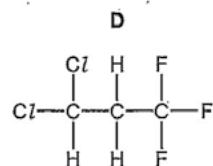
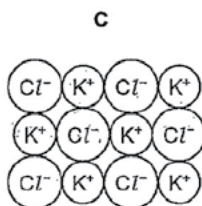
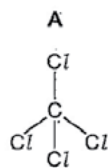
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1 The structures of some substances containing chlorine are shown.



(a) Answer the following questions about these substances.

(i) Which substance is a diatomic molecule?

B

[1]

(ii) Which substance represents part of an ionic structure?

C

[1]

(iii) Which substance is an element?

Explain your answer.

B - it is made up of only one type of atom

[2]

(iv) Determine the simplest formula for substance D.

C<sub>2</sub>HCl<sub>3</sub>F<sub>3</sub>

[1]

Select  
page

Your  
Mark

1(a)(i)

1(a)(ii)

1(a)(iii)

1(a)(iv)

1(b)(i)

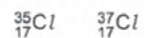
1(b)(ii)

1(b)(iii)

Q1 Mark scheme

(a)(i)	B/chlorine/ $\text{Cl}_2$ ;
(a)(ii)	C/ $\text{KCl}$ /potassium chloride;
(a)(iii)	B; has only one type of atom;
(a)(iv)	$\text{C}_3\text{H}_3\text{F}_3\text{Cl}_2$ ;
(b)(i)	different number of neutrons/different mass numbers/ different number of nucleons;
(b)(ii)	18;
(b)(iii)	7 electrons in the outer shell; first shell has 2 electrons and second shell has 8 electrons;

(b) The symbols for two isotopes of chlorine are shown.



(i) How do these two isotopes differ in their atomic structure?

..... Different number of ~~atoms~~ neutrons..... [1]

(ii) Determine the number of neutrons present in one atom of the isotope  ${}^{35}_{17}\text{Cl}$ .

..... 18..... [1]

(iii) Draw the electronic structure of a chlorine atom. Show all shells and all electrons.



[2]

[Total: 9]

Select  
page

Your  
Mark

1(a)(i)

1(a)(ii)

1(a)(iii)

1(a)(iv)

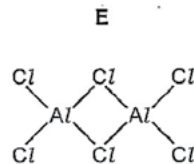
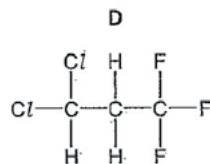
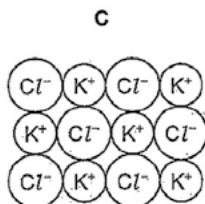
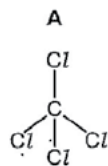
1(b)(i)

1(b)(ii)

1(b)(iii)

Q1	Mark scheme
(a)(i)	B / chlorine / $\text{Cl}_2$ ;
(a)(ii)	C / $\text{KCl}$ / potassium chloride;
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1 The structures of some substances containing chlorine are shown.



(a) Answer the following questions about these substances.

(i) Which substance is a diatomic molecule?

E [1]

(ii) Which substance represents part of an ionic structure?

A [1]

(iii) Which substance is an element?

Explain your answer.

B because it is ONLY Cl  
and elements are the simplest [2]

(iv) Determine the simplest formula for substance D.

~~C3H3F3Cl2~~ (CHF)3Cl2 [1]

Select  
page

Your  
Mark

1(a)(i)

1(a)(ii)

1(a)(iii)

1(a)(iv)

1(b)(i)

1(b)(ii)

1(b)(iii)

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(i) How do these two isotopes differ in their atomic structure?

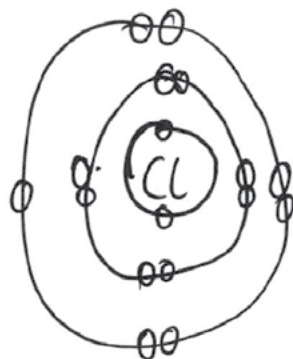
Same atomic mass but different number [1]

(ii) Determine the number of neutrons present in one atom of the isotope  ${}^{35}_{17}\text{Cl}$ .

(35-17) 18 [1]

(iii) Draw the electronic structure of a chlorine atom. Show all shells and all electrons.

17 = 2:8:7



[2]

[Total: 9]

Select  
page

Your  
Mark

1(a)(i)

1(a)(ii)

1(a)(iii)

1(a)(iv)

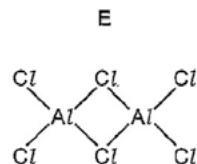
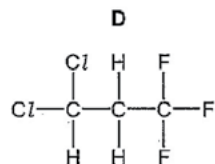
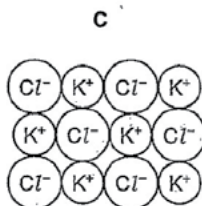
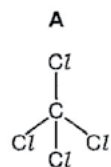
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(a) Answer the following questions about these substances.

(i) Which substance is a diatomic molecule?

..... B ..... [1]

(ii) Which substance represents part of an ionic structure?

..... C ..... [1]

(iii) Which substance is an element?

Explain your answer.

..... B is an element because it has only one type of atom. .... [2]

(iv) Determine the simplest formula for substance D.

..... C<sub>2</sub>H<sub>3</sub>F<sub>3</sub> ..... [1]

Select  
page

Your  
Mark

1(a)(i)

1(a)(ii)

1(a)(iii)

1(a)(iv)

1(b)(i)

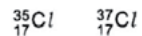
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1(b)(iii)

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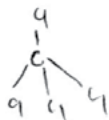
(i) How do these two isotopes differ in their atomic structure?

They have different numbers of electrons and protons. [1]

(ii) Determine the number of neutrons present in one atom of the isotope  ${}^{35}_{17}\text{Cl}$ .

18 [1]

(iii) Draw the electronic structure of a chlorine atom. Show all shells and all electrons.



[2]

[Total: 9]

Select  
page

Your  
Mark

1(a)(i)

1(a)(ii)

1(a)(iii)

1(a)(iv)

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