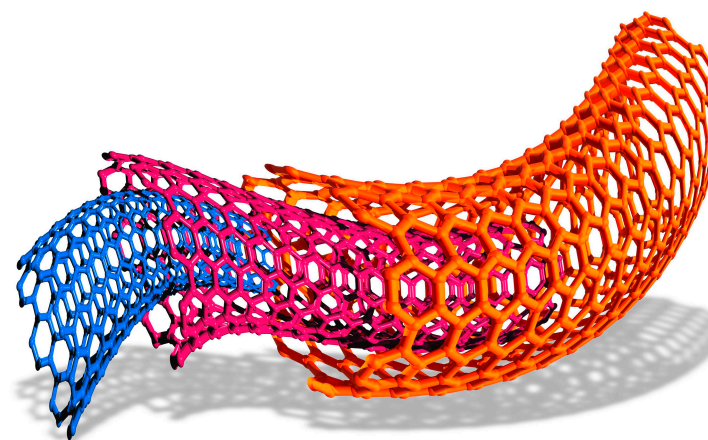




# Interactive Example Candidate Responses

Paper 4 (May / June 2016), Question 1

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



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1 Protons, neutrons and electrons are subatomic particles.

- (a) Complete the table to show the relative mass and relative charge of a proton, a neutron and an electron.

particle	relative mass	relative charge
proton	1	+1
neutron	1	0
electron	$\frac{1}{1840}$	-1

[3]

- (b) Bromine has two isotopes.

- (i) Define the term *isotope*.  
*of the same element*  
*Isotopes are atoms with the same number of protons but different numbers of neutrons.* [2]

- (ii) Explain why the two isotopes of bromine have the same chemical properties.  
*They have the same number of valency electrons*  
*Key*  
*so react the same* [2]

- (c) The table shows the number of protons, neutrons and electrons in some atoms and ions.

Complete the table.

particle	number of protons	number of neutrons	number of electrons
${}^7_3\text{Li}$	3	4	3
${}^{34}_{16}\text{S}^{2-}$	16	18	18
${}^{41}_{19}\text{K}^+$	19	22	18

[5]

[Total: 12]

Select page

Your Mark

1(a)

1(b)(i)

1(b)(ii)

1(c)

Q1 Mark scheme

(a)	particle	relative mass	relative charge	
	proton	1	+1	
	neutron	1	Nil	
	electron	1/1840	−1	
(b)(i)	<b>M1</b> <u>atom(s)</u> of the same element; <b>M2</b> with different number of neutrons;			
(b)(ii)	<b>M1</b> (both have) the same number of electrons; <b>M2</b> in the outer shell;			
(c)	particle	number of protons	number of neutrons	number of electrons
	${}^7_3\text{Li}$	3	4	3
	${}^{34}_{16}\text{S}^{2-}$	16	18	18
	${}^{41}_{19}\text{K}^{+}$	19	22	18

1 Protons, neutrons and electrons are subatomic particles.

- (a) Complete the table to show the relative mass and relative charge of a proton, a neutron and an electron.

particle	relative mass	relative charge
proton	1	positive
neutron	<del>almost</del> 1	neutral
electron	$\frac{1}{1840}$	negative

[3]

- (b) Bromine has two isotopes.

- (i) Define the term *isotope*.

Isotopes are atoms of the same element with same proton number but different number of neutrons. [2]

- (ii) Explain why the two isotopes of bromine have the same chemical properties.

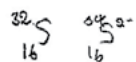
Because they are of the same element, have same number of protons. [2]

- (c) The table shows the number of protons, neutrons and electrons in some atoms and ions.

Complete the table.

particle	number of protons	number of neutrons	number of electrons
${}^7_3\text{Li}$	3	4	3
${}^{34}_{16}\text{S}^{2-}$	16	18	18
${}^{41}_{19}\text{K}^+$	19	22	18

[5]



$\# \text{ nucleons} = p + n$   
 $n = \text{nucleon} - p$

[Total: 12]

Your  
Mark

1(a)

1(b)(i)

1(b)(ii)

1(c)

## Q1 Mark scheme

(a)	particle	relative mass	relative charge
	proton	1	+1
	neutron	1	Nil
	electron	1/1840	-1

(b)(i)	<b>M1</b> atom(s) of the same element; <b>M2</b> with different number of neutrons;		
(b)(ii)	<b>M1</b> (both have) the same number of electrons; <b>M2</b> in the outer shell;		

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	${}^7_3\text{Li}$	3	4	3
	${}^{34}_{16}\text{S}^{2-}$	16	18	18
	${}^{41}_{19}\text{K}^+$	19	22	18

1 Protons, neutrons and electrons are subatomic particles.

(a) Complete the table to show the relative mass and relative charge of a proton, a neutron and an electron.

particle	relative mass	relative charge
proton	$\frac{1.226}{1840}$	neutral
neutron	$\frac{6.13}{1840}$	+
electron	$\frac{1}{1840}$	-

[3]

(b) Bromine has two isotopes.

(i) Define the term *isotope*.

Different versions of the same element have different number of neutrons. [2]

(ii) Explain why the two isotopes of bromine have the same chemical properties.

Because they are still the same element and they both have the same number of protons and electrons. [2]

(c) The table shows the number of protons, neutrons and electrons in some atoms and ions.

Complete the table.

particle	number of protons	number of neutrons	number of electrons
${}^7_3\text{Li}$	3	4	3
${}^{34}_{16}\text{S}^{2-}$	16	16	16
${}^{40}_{19}\text{K}^+$	19	22	18

[5]

[Total: 12]

Select page

Your Mark

1(a)

1(b)(i)

1(b)(ii)

1(c)

### Q1 Mark scheme

(a)	particle	relative mass	relative charge
	proton	1	+1
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(b)(i)	<b>M1</b> <u>atom(s)</u> of the same element; <b>M2</b> with different number of neutrons;
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	${}^7_3\text{Li}$	3	4	3
	${}^{34}_{16}\text{S}^{2-}$	16	18	18
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