IGCSE · Cambridge (CIE) · Chemistry

15 mins 15 questions

Multiple Choice Questions

Atomic Structure & the Periodic Table

Elements, Compounds & Mixtures / Atomic Structure / Electronic Configuration / Isotopes

Easy (5 questions)	/5
Medium (5 questions)	/5
Hard (5 questions)	/5
Total Marks	**/15**

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Easy Questions

1 Which option correctly describes the relative charges and masses of the subatomic particles?

	Proton	Neutron	Electron	Relative mass of proton
A	+1	0	0	0.00054
B	0	+1	+1	1
C	0	+1	-1	0.00054
D	+1	0	-1	1

(1 mark)

2 The atomic number of element Q is 9 and its mass number is 19.

In which group of the Periodic Table should element Q be placed?

A. Group 0

B. Group I

C. Group VII

D. Group II

(1 mark)

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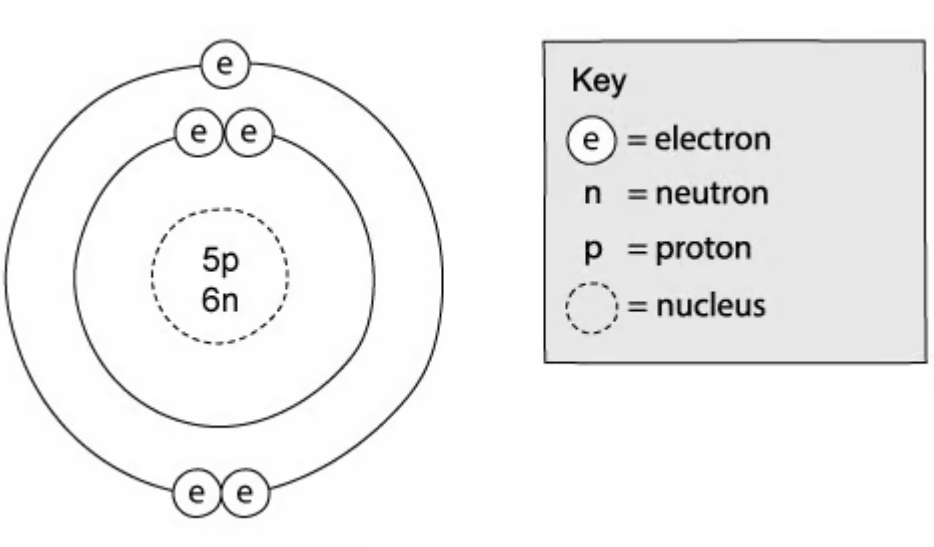
3 The diagram shows the atomic structure of an element.



Which element is it?

A. Carbon

B. Beryllium

C. Oxygen

D. Boron

(1 mark)

4 The atomic structure of atoms Q, R, S and T are shown in the table.

Atom	Number of protons	Number of neutrons	Number of electrons
Q	6	7	6
R	7	7	7
S	6	8	6
T	8	8	8

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Which two atoms are isotopes?

A. Q and S

B. Q and T

C. R and T

D. R and S

(1 mark)

5 Substances can be broadly classified into three categories which are elements, compounds and mixtures.

Which of the following statements is correct?

A. Elements contain different atoms

B. Compounds consist of elements that are not chemically combined

C. Mixtures consist of elements that are chemically combined

D. A mixture can contain elements and compounds

(1 mark)

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Medium Questions

1 The structure of four particles is described in the table.

Particle	Number of protons	Number of neutrons	Number of electrons
Li	3	X	3
Li^+	3	4	2
F	Y	10	9
F^-	9	10	Z

What are the correct values for X, Y and Z?

	X	Y	Z
A	4	7	9
B	3	9	9
C	4	9	10
D	3	7	10

(1 mark)

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2 Element X contains 12 of each sub-atomic particle.

What is the correct Group number for element X?

A. Group 0

B. Group I

C. Group VII

D. Group II

(1 mark)

3 Element X contains 4 electrons in its outer shell and 125 neutrons in its nucleus. What is element X?

A. Beryllium

B. Carbon

C. Tin

D. Lead

(1 mark)

4 Potassium fluoride is an ionic compound formed when one atom of potassium bonds with one atom of fluorine.

Which row correctly describes the charge and electronic configuration of each ion in the compound?

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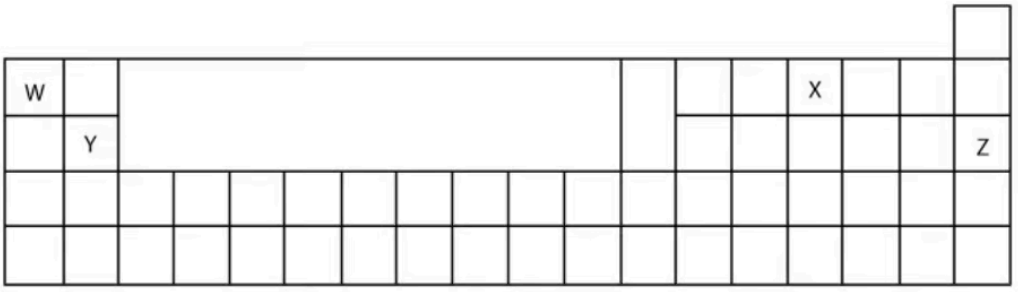
	Potassium ion		Fluorine ion	
A	1 -	2, 8, 8	1 +	2, 8
B	1 +	2, 8, 8	1 -	2, 8
C	1 +	2, 8, 8 ,1	1 -	2, 7
D	1 -	2, 8, 8, 2	1 +	2, 6

(1 mark)

5 A section of the Periodic Table is shown below.



The electronic structure of elements W, X, Y and Z are shown in the table.

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	Electronic structure
W	2, 1
X	2, 4
Y	2, 8, 2
Z	2, 8

Which elements have the correct electronic structure?

A. W and X

B. Y and Z

C. W and Y

D. X and Z

(1 mark)

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Hard Questions

1 The X^+ ion of element X has 16 electrons and a nucleon number of 37.

What is the correct Group number for element X?

A. VII

B. VIII

C. III

D. I

(1 mark)

2 Which row of the table correctly describes the link between outer shell electrons, Group number and Period number?

	outer electrons same as	**group number same as**	**period number same as**
A	group number	period number	outer electrons
B	period number	group number	outer electrons
C	group number	outer electrons	number of electron shells
D	outer electrons	group number	number of electron shells

(1 mark)

3 Extended Only

Which row correctly describes the number of outer shell electrons and properties of isotopes?

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	Number of electrons	Chemical properties
A	same	same
B	same	different
C	different	same
D	different	different

(1 mark)

4 Separate: Chemistry and Extended Only

Iridium has two isotopes, ^{191}Ir and ^{193}Ir. Calculate the relative atomic mass of iridium using the data given:

Mass number	191	193
Percentage abundance	62.7%	37.3%

A. 191.2

B. 191.6

C. 191.7

D. 192.5

(1 mark)

5 A selenide ion has the following notation.

$$^{79}_{34}Se^{2-}$$

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Which row correctly describes the subatomic particles in a selenide ion?

	Protons	Neutrons	Electrons
A	79	34	34
B	34	45	34
C	34	45	36
D	45	34	32

(1 mark)

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