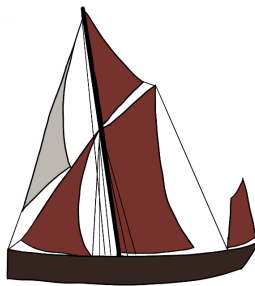

ATOMIC STRUCTURE

PAST PAPER QUESTIONS

Science Exams Sorted



Name:		
Mark: (50)	%	Grade:

2020

Atom Structure Past Paper Questions

1. Element **E** has an atomic number of 5.

In a sample of **E** there are two isotopes. One isotope has a mass number of 10 and the other isotope has a mass number of 11.

a. Explain, in terms of subatomic particles, what is meant by the term isotopes.

.....

b. All atoms of element **E** in this sample contain (2)

A 5 protons

B 5 neutrons

C 6 protons

D 6 neutrons (1)

c. Element **X** has an atomic number of 18.

State the electronic configuration of an atom of element **X**.

.....
(1)

Edexcel June 2019 Higher Paper 1 Q2 b (i), (ii) & (iii)

2. An atom of iron is represented as: ${}^{56}_{26}\text{Fe}$

Give the number of protons, neutrons and electrons in this atom of iron.

Number of protons:

Number of neutrons:

Number of electrons: (3)

AQA May 2018 Higher Paper 1 Q2 b (ii)

3. Elements are made of atoms.

The table below shows the atomic numbers and mass numbers of three atoms.

Atom	Atomic number	Mass number
1	12	24
2	12	25
3	12	26

a. Suggest, in terms of the number of subatomic particles, why the atomic numbers of the three atoms are the same.

Atom Structure Past Paper Questions

.....

 (2)

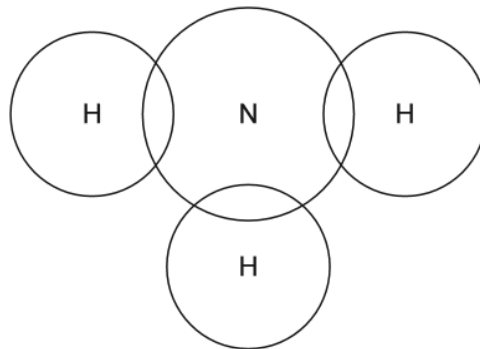
- b. Explain, in terms of the number of subatomic particles, why the mass numbers of the three atoms are different.

.....

 (2)

AQA May 2017 Higher Paper 1 Q1 a (i) & (ii)

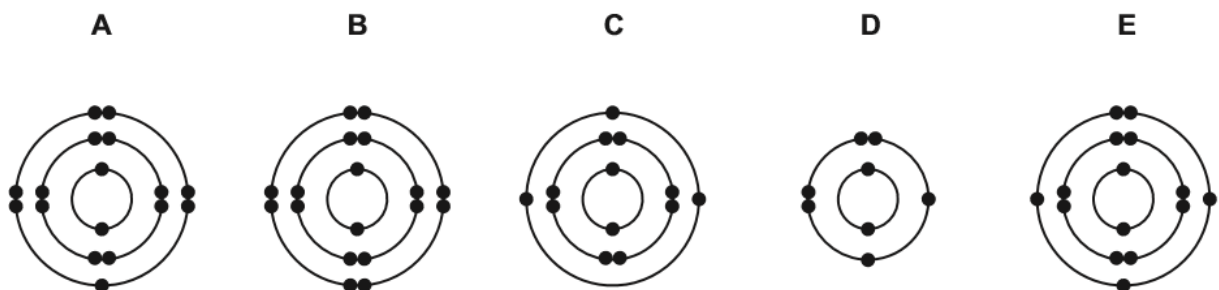
4. Complete the dot-and-cross diagram to show the electron arrangement in a molecule of ammonia. Show outer shell electrons only.



(2)

Cambridge IGCSE May 2018 Paper 3 Theory (Core) Q1 d

5. The electronic structures of five atoms, A, B, C, D and E, are shown.



6. 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 or E, represents:

- a. An atom of a metallic element. (1)
 b. An atom with a proton number of 13. (1)

Atom Structure Past Paper Questions

- c. An atom of phosphorus. (2)
- d. An atom with only two shells of electrons. (2)
- e. An atom which forms a stable ion with a single negative charge. (2)

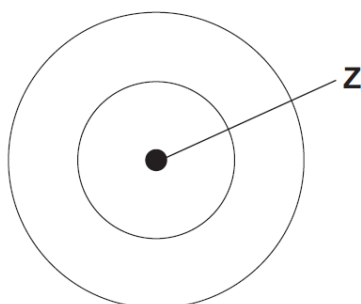
f. Complete the table to show the number of electrons, neutrons and protons.

	number of electrons	number of neutrons	number of protons
$^{14}_6\text{C}$	6		
$^{40}_{19}\text{K}^+$		21	

(3)

Cambridge IGCSE October 2018 Paper 3 Theory (Core) Q1 a & b

7. There are eight elements in the second row (lithium to neon) of the periodic table.
- a. The figure below shows an atom with two energy levels (shells).



- b. Complete Figure 1 to show the electronic structure of a boron atom. (1)
- c. What does the central part labelled Z represent in the figure above?

.....

- d. Name the sub-atomic particles in part Z of a boron atom. (1)
- e. Give the relative charges of these sub-atomic particles

.....

.....

.....

(3)

AQA May 2016 Higher Paper 1 Q1 a

Atom Structure Past Paper Questions

8. This question is about atomic structure and elements.

Complete the sentences.

a. The atomic number of an atom is the number of

..... (1)

b. The mass number of an atom is the number of

..... (1)

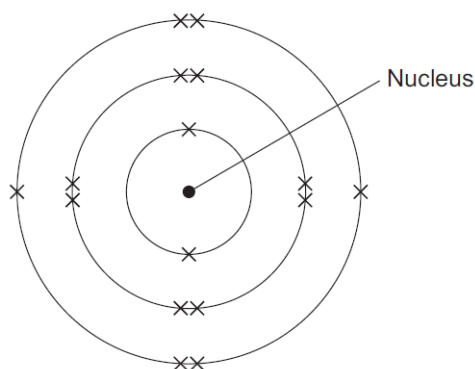
c. Explain why an atom has no overall charge. Use the relative electrical charges of sub-atomic particles in your explanation.

.....
.....
..... (2)

d. Explain why fluorine and chlorine are in the same group of the periodic table.
Give the electronic structures of fluorine and chlorine in your explanation.

.....
.....
..... (2)

e. The figure below shows the electronic structure of an atom of a non-metal.



What is the chemical symbol of this non-metal?

..... (1)

AQA May 2015 Higher Paper 1 Q1 a, b, c, & d.

Atom Structure Past Paper Questions

9. An atom of potassium has an atomic number of 19 and a mass number of 39.
- a. Complete the table to show the number of protons, neutrons and electrons in this potassium atom.

Number of		
Protons	Electrons	Neutrons

(2)

- b. Describe the positions of these particles in the potassium atom.

.....

(2)

- c. State the electronic configuration of this potassium atom.

.....

(1)

- d. Give the relative mass of an electron.

.....

- e. A sample of gallium contains 60.2% of gallium-69 and 39.8% of gallium-71.

(1)

Calculate the relative atomic mass of gallium.

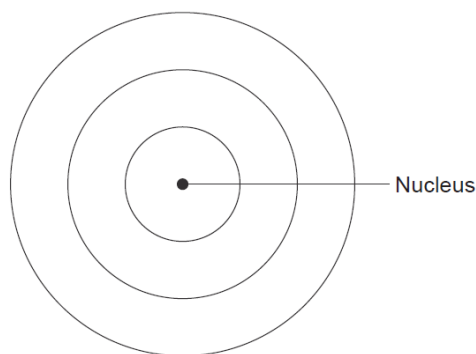
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(3)

Edexcel June 2016 Higher Paper 2 Q4 a & b

10. Aluminium has many uses.

- a. An aluminium atom has 13 electrons. Draw the electronic structure of an aluminium atom.



(1)

Atom Structure Past Paper Questions

b. Name the two sub-atomic particles in the nucleus of an aluminium atom.

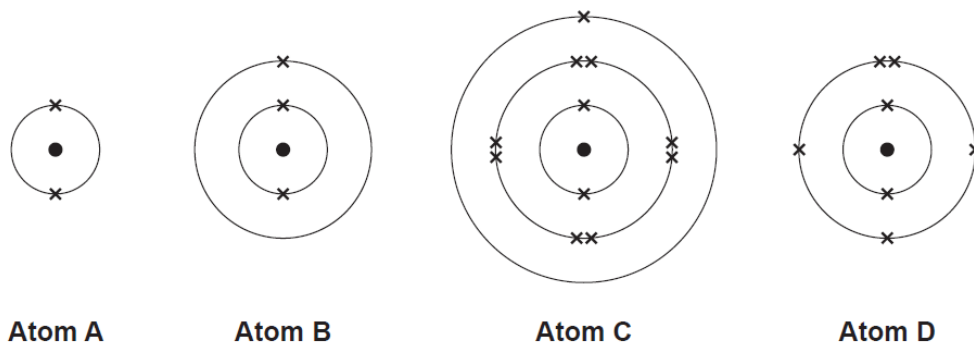
..... and
(1)

c. Why is there no overall electrical charge on an aluminium atom?

.....
.....
(1)

AQA June 2013 Higher Paper 1 Q1 a

11. The diagrams show the electronic structure of four different atoms.



a. Name the two sub-atomic particles in the nucleus of an atom.

.....
(1)

b. Why is there no overall electrical charge on each atom?

.....
(1)

c. Why is atom A unreactive?

.....
(1)

d. Which two of these atoms have similar chemical properties?

Give a reason for your answer.

.....
.....
.....
(2)

AQA June 2012 Higher Paper 1 Q1 a, b, c & d