



**Science Revised Syllabus  
Junior Certificate  
Higher Level**

**Past Exam Questions on  
C Atomic Structure**

**Q4 Part (f) 2013**

(f) Ernest Rutherford (1871-1937) suggested the existence of the atomic nucleus in 1911.

Give two properties of the atomic nucleus.

1 \_\_\_\_\_

2 \_\_\_\_\_



**Q4 Part (c) 2011**

(c) What are *isotopes*?

What? \_\_\_\_\_

\_\_\_\_\_

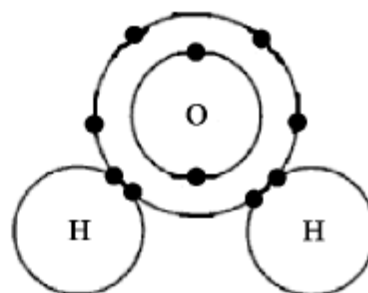
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**Q6 Part (a) 2011**

**Question 6**

(39)

(a) The diagram shows the way the atoms bond together in a molecule of water.



(i) What is a molecule? (3)

\_\_\_\_\_

\_\_\_\_\_

(ii) Each hydrogen atom shares two electrons with the oxygen atom. What name is given to the type of bonding that involves the sharing of pairs of electrons? (3)

\_\_\_\_\_

(iii) In the space below, draw a diagram of a methane molecule,  $\text{CH}_4$ , showing the bonding between its atoms. (6)

(iv) Describe a second type of chemical bonding and name a compound which has this type of bonding.

Describe \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

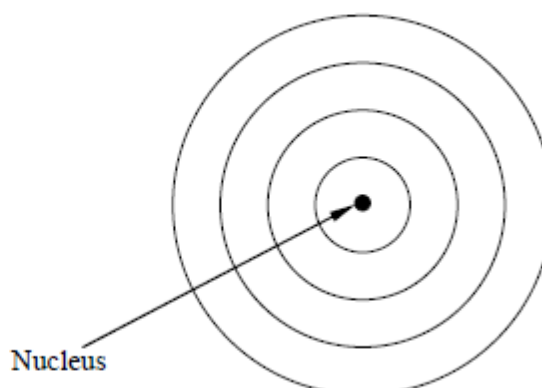
\_\_\_\_\_

Compound \_\_\_\_\_

#### Q4 Part (d) 2010

- (d) A potassium atom has atomic number 19 and a mass number of 39.

Complete the diagram using dots or crosses to clearly show the arrangement of electrons in the potassium atom.



#### Q4 Part (e) 2009

- (e) Approximately 98.89% of carbon on the surface of the earth and in the atmosphere is carbon-12 the remaining approximately 1.11% is carbon-13. The numbers 12 and 13 are mass numbers. The atomic number of carbon is 6.

(i) *How many neutrons* are in the nucleus of a carbon-13 atom?

How? \_\_\_\_\_

(ii) Enter the *missing word* in the following sentence.

Carbon-12 and carbon-13 are \_\_\_\_\_ of carbon.

#### Q4 Part (c) 2008

- (c) Sir Joseph John Thomson (1856-1940) announced his *discovery of the electron in 1897* following extensive experimental work. He was awarded the Nobel Prize in 1906. Compare the *charge and the mass* of an *electron* with the *charge and the mass* of a *proton*.

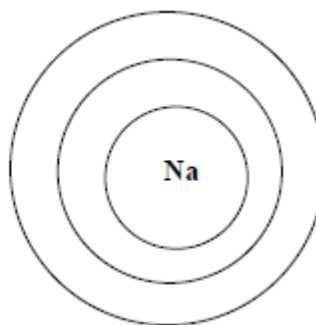
Charge \_\_\_\_\_

Mass \_\_\_\_\_



**Q4 Part (a) 2007**

- (a) The diagram represents a sodium atom. The circles are electron orbits and the 'Na' represents the nucleus. The atomic number of sodium is 11. Using **dots** or **Xs** to represent electrons in the orbits give the *electronic structure* of sodium.



**Q4 Part (a) 2006**

- (a) Define the term '*isotope*'. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Q4 Part (f) 2006**

- (f) Niels Bohr received the Nobel Prize for physics in 1922 for his model of the electronic structure of the atom. Potassium has an atomic number of 19. Give the arrangement of the electrons in an atom of potassium.



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