

AQA, OCR, Edexcel

A Level

A Level Biology

**Water and Inorganic Ions
Questions**

Name:

M M E

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Total Marks: /27

Water & Inorganic Ions

Water is one of the most important molecules both on the planet and in our bodies. 80% of the contents of our cells is water and it has many important functions both inside and outside of our cells.

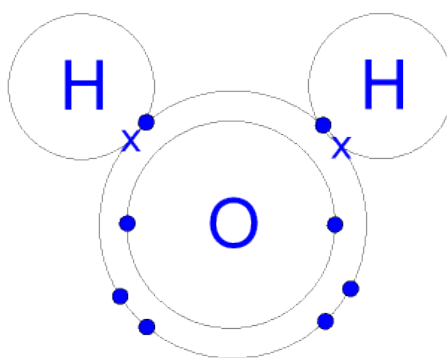
1. One of water most important functions is that it transports substances around the body. It is a polar molecule and as a consequence means that it is a good solvent.

a.

i) What type of bonding joins the two hydrogen atoms to the oxygen atom? (1 mark)

ii) What does the term polar mean in the context of water? (2 marks)

b. The diagram below shows the structure of a water molecule.



i) What is the most electronegative element in the above diagram? (1 mark)

ii) What does the term electronegativity mean with regard to a molecule of water? (3 marks)

iii) Water has cohesive properties; explain how electronegativity promotes this. (2 marks)

iv) Why is cohesion important in transporting substances? (1 mark)

c) It is the polarity of water that make it a good solvent.

i) What is the definition of a solvent? (1 mark)

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2.

a.

i) Identify 3 materials that water helps to transport around the body. (3 marks)

b. Water has many vital roles in the body which include its facilitation of chemical reactions.

i) Identify two reactions within the body that require water. (2 marks)

ii) How does water help in control of body temperature? (2 marks)

3. Inorganic ions are necessary for cellular activity in plants and animals. Phosphate ions PO_4^{3-} are considered to be one of the most important inorganic ions in mammals as they have so many different roles.

a)

i) Identify three uses of inorganic ions in the human body. (3 marks)

ii) Name two uses of calcium in the body. (2 marks)

b) The image below shows a plant with discoloured leaves.



i) Which two ions could the plant have a deficiency in? (2 marks)

ii) Why is nitrogen essential in plant development? (2 mark)