

# Chemistry

**Delprov A1**  
engelsk version

Årskurs

9

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Elevens namn och klass/grupp



## NATIONAL TEST IN CHEMISTRY 2018

The national test gives you a chance to show what you know about chemistry. On the right of each question you will find a symbol that tells you which of three abilities you can demonstrate in your answer.

The rows in the symbol describe these different abilities.

<b>E C A</b>			

→ The ability to use knowledge of chemistry to examine information, communicate and take a view on questions concerning energy, the environment, health and society.

→ The ability to carry out systematic investigation in chemistry.

→ The ability to use concepts of chemistry, its models and theories to describe and explain chemical relationships in society, nature and in people.

For each row you will be able to show your knowledge at three different levels: E, C and A.

For example, the table on the right indicates that the question allows you to show that you can use concepts of chemistry, its models and theories to describe and explain chemical relationships in society, nature and in people at level E and C.


Your answers to the questions should be clearly written so that other persons can read your text and understand your meaning. Therefore it is important that you show all your work.

Time allowed: 75 minutes

Name: \_\_\_\_\_

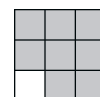
School: \_\_\_\_\_ Class: \_\_\_\_\_

Date of Birth: Year \_\_\_\_\_ Month \_\_\_\_\_ Day \_\_\_\_\_

*Your answers must be written on separate sheets of paper. The question paper must be returned to your teacher together with your answers.*

1. The picture shows the exchange of compounds between a human and a tomato plant.

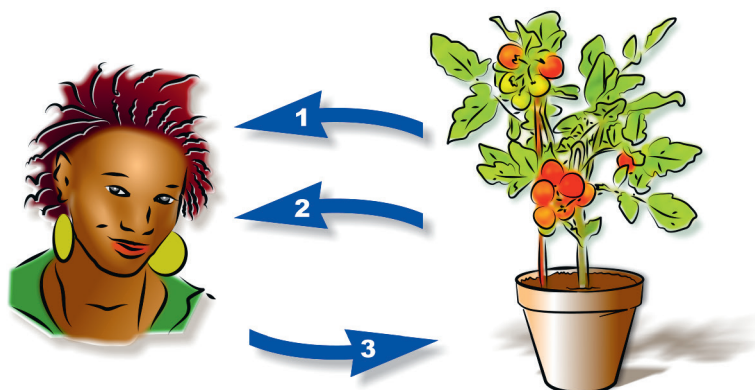
Combine alternatives A–C with correct number 1–3.



A. Oxygen

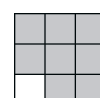
B. Carbon dioxide

C. Carbohydrates

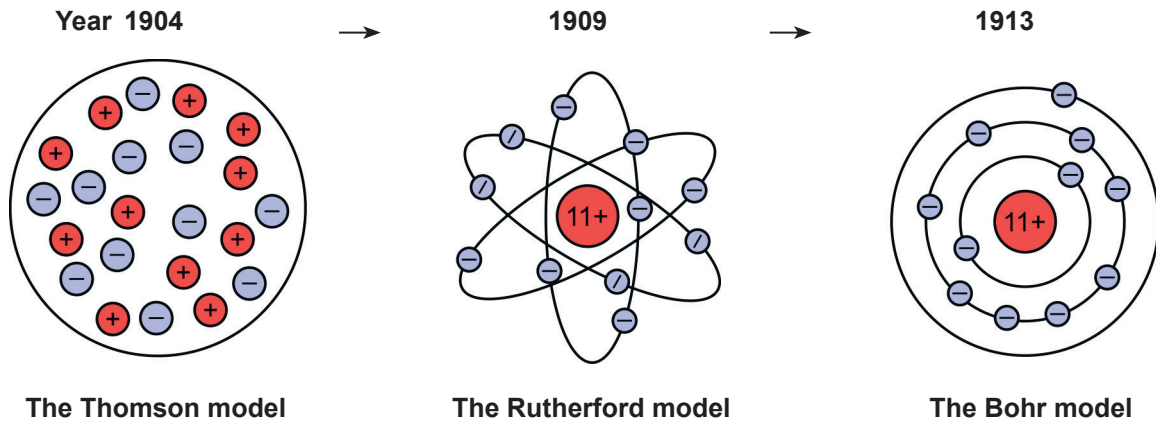


2. Many municipalities offer households the possibility to separate food waste from household waste. Households then put the food waste in a separate bin.

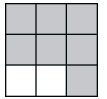
Give one example why it might be good for the environment to separate the food waste.



3. An atom is made of different particles and has over time been described by different models.

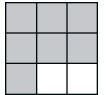


- a) Compare the three atom models. State a similarity and a difference between them.

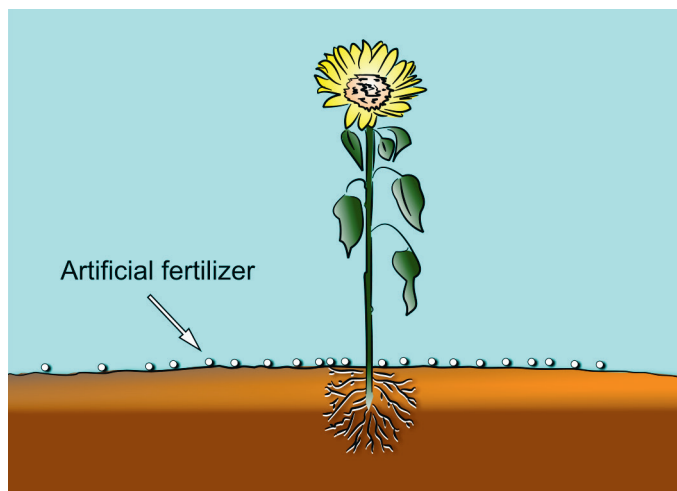


In school, the Bohr atom model is usually used.

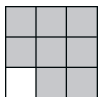
- b) Explain how the Bohr atom model can be used to decide an element's possibility of react and forming a chemical compound.



4. Plants absorb potassium ions from the soil through the roots. Potassium ions are found naturally in the soil but are also a part of fertilisers spread in the fields in the form of small pellets. Water is needed for the plants to absorb potassium ions from the fertiliser.

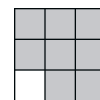


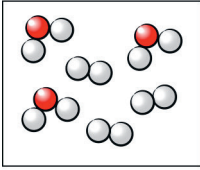
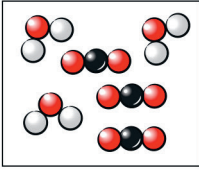
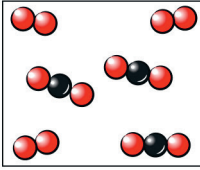
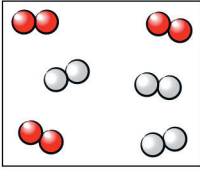
Water contributes in two ways to the potassium ions from fertilisers reaching the plants' roots. Which two ways?



5. An example of a chemical reaction is when a stearin candle is burning. Stearin consists of carbon atoms, oxygen atoms, and hydrogen atoms.

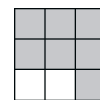
One of the alternatives A–D shows gases formed by combustion of a stearin candle. Which?



<b>A.</b>	<b>B.</b>	<b>C.</b>	<b>D.</b>
			
Water vapour and hydrogen gas	Carbon dioxide and water vapour	Carbon dioxide and oxygen gas	Oxygen gas and hydrogen gas

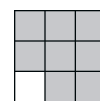
6. There are molecules in the body called enzymes. Enzymes influence chemical reactions in the body. In the intestines, there are for example enzymes influencing milk sugar (lactose).

Explain how enzymes influence chemical reactions.



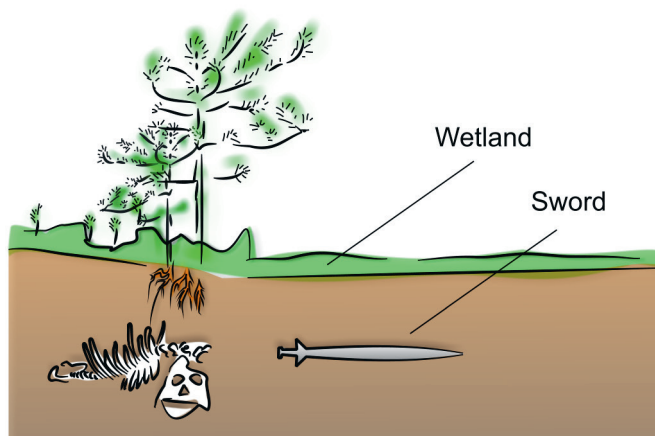
7. 78% of the air consist of nitrogen molecules. Nitrogen compounds exist in all living organisms, for example in plants.

One of the alternatives A–D describes how the air's nitrogen molecules become available to plants. Which?

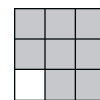


- A.** The nitrogen molecules in the air are transformed by sunlight into nitrogen compounds and are absorbed by the plants through the leaves.
- B.** The nitrogen molecules in the air are dissolved in rain drops and are transformed into nitrogen compounds absorbed by the plants through the roots.
- C.** The nitrogen molecules in the air are transformed by bacteria in the soil into nitrogen compounds and are absorbed by the plants through the roots.
- D.** The nitrogen molecules in the air are not transformed, they are absorbed directly by the plants through the leaves.

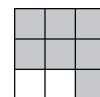
8. Archaeologists have found a sword from the Iron Age in a wetland. Even though the sword is made of iron, it has not rusted.



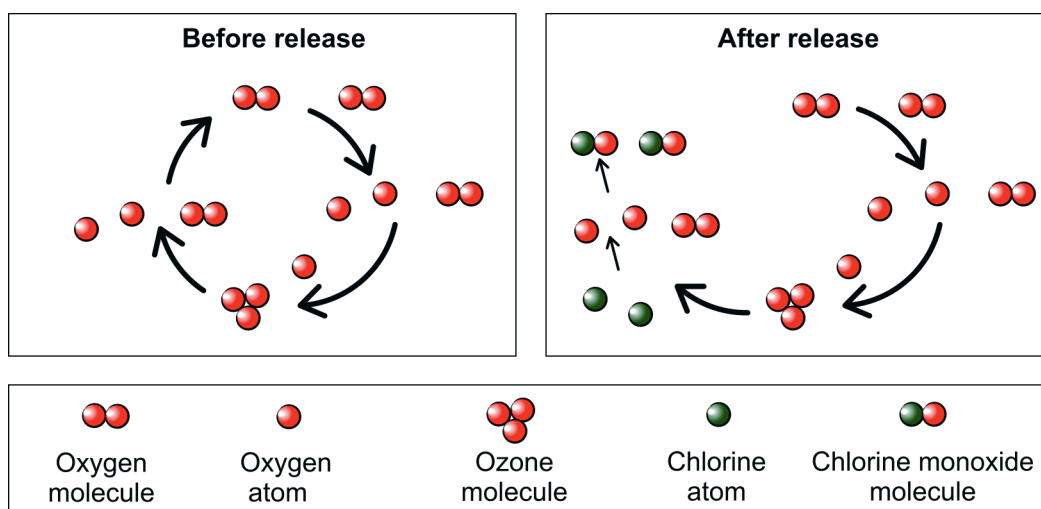
One of the alternatives A–D explains why the sword has not rusted. Which?



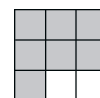
- A. The nitrogen molecules in the air have not come in contact and reacted with the sword.
- B. The oxygen molecules in the air have not come in contact and reacted with the sword.
- C. The carbon dioxide molecules in the air have not come in contact and reacted with the sword.
- D. The water molecules in the air have not come in contact and reacted with the sword.
9. Acid rain is formed when an acidic gas is dissolved into rain drops. Acid rain contributes to acidification of lakes and rivers and leads to a drop in the pH value.
- Give one example of an acidic gas that contributes to acid rain.
  - Explain from where the acidic gas in the air comes.



10. In the atmosphere, there exists an ozone layer protecting the Earth from ultraviolet radiation. Ozone is decomposed and regenerated in a cycle. From the middle of the 20th century, humans have released chlorine compounds to the atmosphere thereby influencing the ozone layer in the long term.



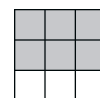
Use the pictures to explain how the release of chlorine compounds influences the ozone layer in the long term.



11. In Sweden, it is becoming more common to buy used clothes in second-hand shops and through the internet. There are also shops that have started selling clothes made with recycled textiles. Through this, we do not have to produce as many textiles.



Reason about two consequences in two steps that the recycling of textiles has for the environment.





12. In the middle of the 19th century, factories started producing soap. The use of soap has had a large influence on human health.

Give one example how.



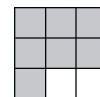
13. Throughout the ages, humans have fertilised their farming areas. In the beginning of the 20th century, the possibility of producing chemical fertilisers was discovered. This increased the use of fertilisation. In the future, there might be a lack of chemical fertilisers.

**Facts:**

1. In chemical fertilisers, there are nutrients containing nitrogen, potassium, and phosphorus.
2. Chemical compounds with nitrogen, potassium, and phosphorus exist in all living organisms.

Use the information in the fact box to explain

- what consequence a lack of chemical fertilisers might have  
and
- how this consequence might influence human living conditions from a local and global perspective.









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