

# Chemistry

## Delprov A1

engelsk version

Årskurs

9

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Elevens namn och klass/grupp



## NATIONAL TEST IN CHEMISTRY 2017

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>										
<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> </table>										<p>↖ The ability to use knowledge of chemistry to examine information, communicate and take a view on questions concerning energy, the environment, health and society.</p> <p>← The ability to carry out systematic investigation in chemistry.</p> <p>↙ The ability to use concepts of chemistry, its models and theories to describe and explain chemical relationships in society, nature and in people.</p>

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, NOT on the question paper. The question paper must be returned to your teacher together with your answers.*



1. Photosynthesis is a chemical reaction requiring energy.

a) From which of the alternatives **A-E** do the plants get this energy?


- A. Water
- B. Oxygen
- C. Carbon dioxide
- D. Sunlight
- E. Dextrose

The required energy for the photosynthesis is transformed and stored as chemical energy.

b) In which of the alternatives **A-E** is the chemical energy stored?


- A. Water
- B. Oxygen
- C. Carbon dioxide
- D. Sunlight
- E. Dextrose

2. An EU report warns about a chemical compound in some hair sprays. The chemical compound can affect the internal organs of the body, the liver for example.

Explain how the chemical compound in the hair spray can get into the body and how it can be transported to the liver.


3. Nitrogen gas is the most common gas in the atmosphere. The molecules in nitrogen gas contain two nitrogen atoms. There are also other chemical compounds consisting of nitrogen atoms.

In the boxes 1-4 statements are given about the nitrogen atom's cycle. Choose the correct statement in each box.



**Box 1.**  
Energy from lightning transforms

- A. nitrogen gas into nitrogen compounds.
- B. nitrogen compounds into nitrogen gas.

**Box 2.**  
Proteins are produced from, for example

- C. nitrogen gas from air.
- D. nitrogen compounds from plants.

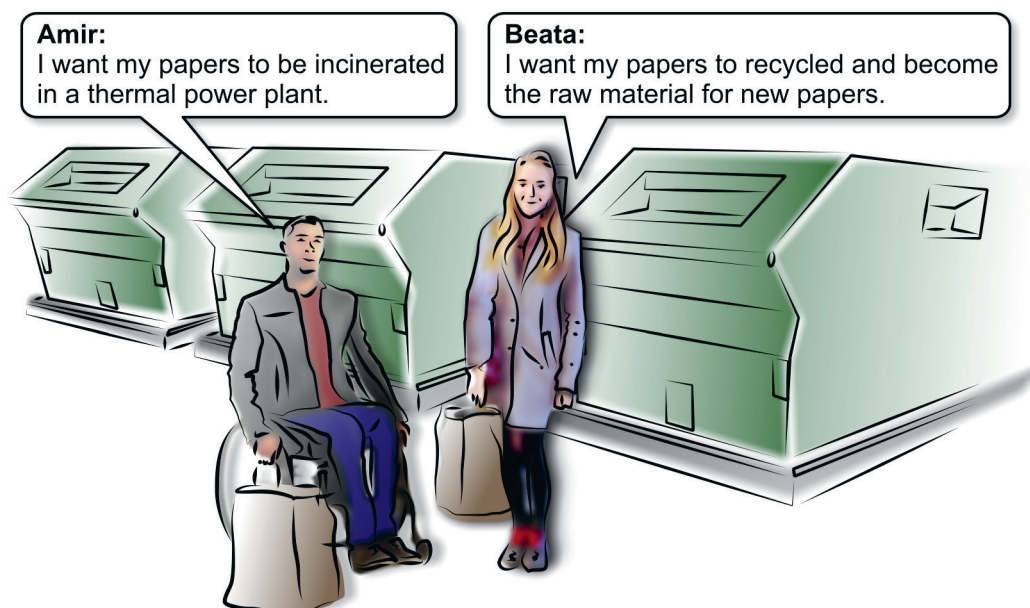
**Box 3.**  
Pea plants have bacteria on their roots transforming

- E. nitrogen gas into nitrogen compounds.
- F. nitrogen compounds into nitrogen gas.

**Box 4.**  
Plants are absorbing

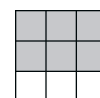
- G. nitrogen gas through the leaves.
- H. nitrogen compounds through the roots.

4. Amir and Beata are on their way to the paper recycling area with one paper bag each containing old newspapers. Amir and Beata have different requests on how the papers should be handled after the gathering.



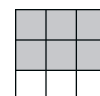
The environment is affected by how they are treated after gathering.

- Use your knowledge about the use of energy resources to reason in two steps about how Amir's wishes can affect the environment.
- Use your knowledge about the use of natural resources to reason in two steps about how Beata's wishes can affect the environment.



5. Human use of fossil fuels contributes to an increasing amount of carbon dioxide in the atmosphere. This leads to a pH decrease in the seas.

Explain why an increasing amount of carbon dioxide in the atmosphere decreases the pH level of the seas.



6. Scientific discoveries have led to the development of different methods within chemistry.

Combine each of the discoveries **1-3** with one of the areas of use **A-C**.



### Scientific discoveries

### Areas of use

1. Bacteria die when heated.

A. Possibility of producing petrol and diesel.

2. Liquids with different boiling points can be separated.

B. Possibility of producing dirt-rejecting material.

3. Molecules can be produced artificially.

C. Possibility of storing food longer.

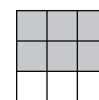
7. Through electrolysis, elements can be produced from chemical compounds by adding electrical energy.

The two descriptions below are examples of different areas where electrolysis is used.

Electrolysis is used during the production of aluminium.

Electrolysis is used to protect and coat the surface of metals, for example the galvanization of screws.

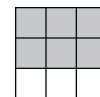
Start from one of the examples to explain how the use of electrolysis has had an impact on humans' living conditions. State one possibility and one risk of the use in your explanation.





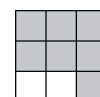
8. Kajsa has painted a bureau with an oil-based colour and is going to clean the brush.

Explain which of the solvents water or paint thinner, for example white spirit, Kajsa should use to dissolve the colour on the brush.

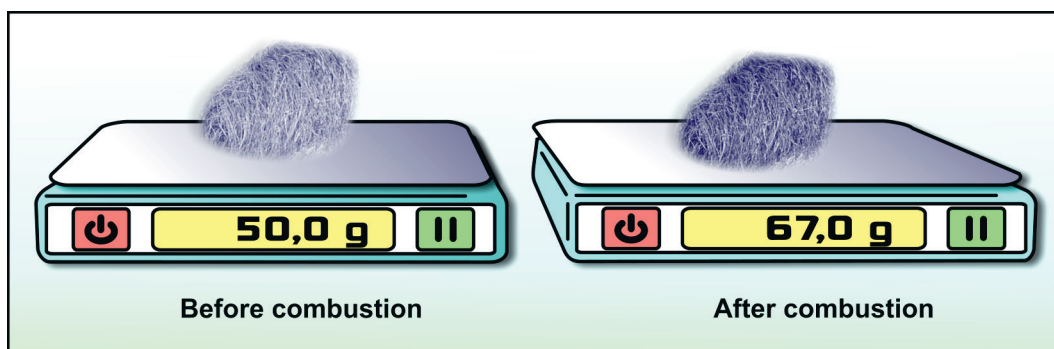


9. Phosphorus is an important compound in chemical fertilizers. Farmers use fertilizers when growing, for example vegetables. Phosphorous is found in phosphorous compounds in all living organisms, both in plants and animal. There is a risk that there will be a lack of phosphorous compounds in the future for the production of chemical fertilizers.

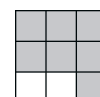
Use your knowledge about cycles to explain why there might be a lack of phosphorous compounds in the future for the production of chemical fertilizers.



10. The picture shows the mass of steel wool before and after combustion.



Start from the information in the picture to explain why the mass of steel wool has changed after combustion.









Institutionen för tillämpad utbildningsvetenskap