Ämnesprov, läsår 2014/2015



Elevens namn och klass/grupp

Prov som återanvänds av Skolverket omfattas av sekretess enligt **17 kap. 4 § offentlighets- och sekretesslagen**. Detta prov återanvänds av Skolverket t.o.m. **2021-06-30**.



NATIONAL TEST IN BIOLOGY 2015

The national test gives you a chance to show what you know about biology. 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.



The ability to use knowledge of biology to examine information, communicate and take a view on questions concerning health, natural resource use and ecological sustainability

The ability to carry out systematic studies in biology

The ability to use concepts of biology, its models and theories to describe and explain biological relationships in the human body, nature and society

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 biology, its models and theories to describe and explain biological relationships in the human body, nature and society 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. The characteristics of humans can be determined by either only heredity, or a combination of heredity and environment.

Match the four characteristics A - D to the right explanation 1 - 2.

- **A.** Eye colour
- **B.** Allergy **1.** Characteristic determined only by heredity.
- **C.** Musical talent **2.** Characteristic determined by a combination of heredity and environment.
- **D.** Blood type

2. There are millions of species of plants and animals. New species are still being discovered. Species are grouped according to how they are related to each other.

Describe one way to determine the relationship between a newly discovered species and previously known species.

3. Through evolution, insects and plants have developed a reliance on each other. One example of something that is beneficial for both organisms is pollination.

a) Describe the benefits of pollination for insects **and** the benefits of pollination for plants.

In many places, the number of pollinating insects is decreasing.

b) Give an example of **one** effect that decreased pollination can have on food production.



4. Fertilisation is when an egg cell and a sperm cell fuse.

Which one alternative A - D best describes where in the female sex organs that an egg cell and a sperm cell fuse?





- 5. Antibiotics are a type of pharmaceutical drug that can treat a certain type of infections in the body.
 - a) Which type of organism causes these infections?

Antibiotics become less effective the more they are used. The health care system therefore wants to avoid unnecessary use of antibiotics.

- b) Explain why antibiotics become less effective the more they are used.
- 6. Two boys are together and a girl and a boy are together. The two couples are discussing different contraceptives for having safe sex, and possible effects if they do not use protection.
 - a) Which contraceptive can both couples use to have safe sex? Explain why.
 - b) Discuss possible effects of unprotected sex for the two couples. Discuss both short term **and** long term effects.

7. Most species of birds can fly. There are some exceptions, for example penguins. The wings of penguins have become adapted to swimming through evolution.

Use knowledge of evolution **and** natural selection to explain how the wings of penguins have become adapted to swimming.





8. Biomass is the total mass of all living organisms in, for example, a forest. The production of biomass is influenced by the factors: hours of sunshine, temperature and precipitation. The production of biomass is much greater in a rain forest than in a coniferous forest.



Use the diagrams **and** knowledge of photosynthesis as a starting point and explain why the production of biomass is much greater in a rain forest than in a coniferous forest.

9. When the supply of crude oil decreases, the possibility of producing, for example, gasoline goes down. This leads to an increased demand for other fuels for our cars. One such fuel is ethanol. Ethanol can, for example, be produced from different types of grains, sugar cane, rice and waste from the forest industry.

Imagine that all cars in the world could run on ethanol instead of gasoline. The change of fuels might, from different aspects, have environmental consequences.



Use **the different aspects** as a starting point and discuss what positive **and** negative consequences the change of fuel from gasoline to ethanol could have for the environment.

10. In the body there are stem cells. Stem cells are immature cells that can mature into different types of cells.

The texts below are examples of how stem cells are used in health care.



Use **one** of the two examples as a starting point and explain how the use of stem cells in health care can affect the living conditions of humans. State both an opportunity **and** a risk in your explanation.





Institutionen för tillämpad utbildningsvetenskap