Biológia angol nyelven középszint — írásbeli vizsga

Név: ...........................................................  osztály:......

BIOLÓGIA
ANGOL NYELVEN
BIOLOGY

2007. május 17. 8:00

KÖZÉPSZINTŰ
ÍRÁSBELI VIZSGA
INTERMEDIATE LEVEL
WRITTEN EXAM

Az írásbeli vizsga időtartama: 120 perc
The exam is 120 minutes long

Pótlapok száma / Number of extra sheets
Tisztázati / Final version
Piszkozati / Drafts

OKTATÁSI ÉS KULTURÁLIS
MINISZTÉRIUM
MINISTRY OF EDUCATION
AND CULTURE
Important information

Read this information sheet before you start working.

You have 120 minutes to complete the standard level exam paper. The following assignments are open-ended or closed-ended ones.

When answering multiple choice questions one or more CAPITAL LETTERS should be written into the empty boxes. (Not numbers.) These are the codes for the right answer(s). Make sure that your letters are unambiguous, because uncertain answers will not be accepted. In case of correction you are asked TO CROSS OUT the wrong letter clearly and TO WRITE THE CODE FOR THE RIGHT ONE BESIDE.

A D Correct A X C Acceptable B D Wrong

When answering open-ended questions technical terms, short answers of 1-or-2 words, a sentence or several sentences should be created. Take care of GRAMMATICAL CORRECTNESS. Grammatically ambiguous or unintelligible answers (e.g. uncertain subject in a sentence) will not be accepted even if the right answer is included.

Use black or blue ink.

DON’T WRITE INTO THE GREY-COLOURED BOXES.

We wish you a good work.
I. Living organisms and ways of life 5 points

Group the following species according to the descriptions below. Put the serial number of the species in the right circle. (Use each number only once. No mark for a number put in more than one circle.)

1. Hyphae of downy mildew (=peronoszpóra) damage grape-vine and fruit-trees.
2. Grape-vine is a cultivated plant from ancient times.
3. Caterpillars of long-palped tortix (=szőlőILONCA) not only roll the vine leaves, but also chew the buds and bunches of grapes.
4. Organic materials of manure turned in the soil are transformed into easily available ions by decay bacteria for the vine.
5. The sugar-rich grape juice obtained from the bunches of grape is fermented into alcoholic drink by yeast.

II. Mushroom poisoning 8 points

A lady (aged 53) and her son (aged 31), residents of a Szabolcs county village Penészlek, consumed death cap (=gyilkos galóca) on Tuesday. The same day they were taken to hospital. Detailed examinations showed they ate death cap cooked by the lady. A dog also ate the poisonous food, since then the animal has passed away.

...... Death cap causes 95 percent of all fatal poisoning in Hungary. In contrast with cartoons, this fungus has no red, spotted cap, but it seems to be an average-looking mushroom with greenish cap, ring and volva (a cup-like structure at its base). It can be confused with horse mushroom (=erdőszéli csiperke) easily, that is edible. There are one or two milligrams of poison in a death cap, but even the fifth of this would kill a man. The symptoms often appear only the second day. People who survive poisoning must face up to the fact of serious liver damages. The family is still in bad condition and is treated in the intensive care unit of the hospital.

Index, 22 July 2005
On the grounds of this text and your former studies, answer the following questions

1. Which type of body organisation do mushrooms belong to? (1 point)

2. Although informations on fungi could be collected from plant guide books, they are not regarded as plants. Explain. Name at least one reason. (1 point)

Mention two typical characteristics that help you to tell the difference between death cap and horse mushroom. (2 points)

5. Can forced vomiting help the patient at the appearance of the first symptoms? Explain. (1 point)

6. Which organ of our body is responsible for the breakdown, „neutralization” of ingested poisons? (1 point)

From a human point of view there are many useful species of fungi. These species take part in biochemical reactions used in the production of foods or medicines. Mention two applications in these economic sectors. (2 points)

1. 2. 3. 4. 5. 6. 7. 8. Total
III. The structure and function of a leaf  

The figure below represents the vertical section of a leaf of a terrestrial, dicot plant.

1. *Name the tissues or cells indicated by letters*  
   (5 points)

2. Condition of its cells regulate water-loss and uptake of carbon-dioxide:  
   (1 point)
3. Cells of this part are loosely arranged and there are large air spaces in it:  
   (1 point)
4. This layer is thick and waxy in leathery (glossy) leaves:  
   (1 point)
5. Cells of this layer only consume oxygen in the dark, but also produce oxygen when they are exposed to light:  
   (1 point)
6. Cells of this layer contain many organelles bordered by double membrane. The inner membrane of these organelles forms disc-shaped, flattened structures:  
   (1 point)
7. Structures indicated by letter "E" are typically found only on the undersurface of leaves at terrestrial plants. Explain briefly.  
   (1 point)
8. There are characteristic differences between the structures of tissues "C" and "D". Explain the biological role (function) of the characteristic structure observed at tissue "D". 

(1 point)

IV. Dragonflies 10 points

After reading the excerpt carefully and studying the figure answer the questions

The more powerful the solar radiation is, the more agile the dragonflies are and less frequently rest on the vegetation during their flights. They grab and eat the flying insects, their main food, in the air.

Like imagos, larval dragonflies are also predators and they are waiting for the prey in the depth of water instead of air. The prey of the emperor dragonfly (Anax imperator) can be an aquatic insect-larva, tadpole or newt-larva and sometimes young fish.

The number of dragonflies is limited by quick-flying birds that hunt them, parasitic ichneumon wasps(*) and tiny mites living in large numbers on their bodies.

(Based on Élet és Tudomány 2001/23 and URANIA Állatvilág "Rovarok")

(1 point)

1. The high value of which environmental factor increases the "agility" of dragonflies?

2. An environmental factor is required for the reproduction and development of dragonflies but not for those of mammals. Which one?

3. The following pyramid of numbers represents the members of the food chain. Producers are at the level "A". To which trophic level(s) would you put dragonflies? Put the letter of the correct answer in the box. (1 point)

A) to levels "A" and "B"
B) to levels "B" and "C"
C) to levels "C" and "D"
D) to levels "B", "C" and "D"
E) to all four levels
4. What is/are the trophic level(s) of dragonfly-eating birds in the previous pyramid?

Put the letter of the correct answer in the box.

(1 point)

A) levels "B" and "C"
B) levels "A", "B" and "C"
C) level "C"
D) level "D"
E) levels "B", "C" and "D"

5. Through which structure of an adult dragonfly can respiratory oxygen enter its body? Put the letter of the correct answer in the box.

(1 point)

A) through the mouth-pore
B) through the spiracles of the abdomen
C) through the antennae
D) through the nostrils
E) they do not need oxygen

6. Based on the previous excerpt, make a list of the animals eaten in larva/adult form by dragonflies.

In larva stage: .......................................................

In adult form: .......................................................

7. After studying the picture name two characteristics of a dragonfly’s body that put them into the group of Insects.

(1 point)

• ...........................................................................................................

• ...........................................................................................................

8. Write few sentences about how the body-structure of dragonflies are related to their way of life and feeding. (Emphasize at least two typical characteristics.)

(2 points)

...........................................................................................................

...........................................................................................................

...........................................................................................................

...........................................................................................................
9. The following graph shows the changes in the number of individuals of adult emperor dragonflies at a given habitat. Which curve represents the changes in the number of individuals of parasitic mites? (Let us suppose that this species of dragonfly is the only host for the mite.) *Put the letter of the correct answer in the box.*

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</table>

(1 point)
V. The cycle of matter and flow of energy through an ecosystem  10 points

The figure below represents the flow of matter and energy. "X", "Y" and "Z" mark groups of organisms, in which the indicated processes may take place. Study the figure carefully and put the appropriate letter in the boxes next to the statement. The arrows indicate the direction of the flow of matter or energy. (2 points)

1. The flow of organic material including its chemical energy content.

2 Oxygen

3. Light energy

4. Water

5. Match the "X", "Y" and "Z" elements of this ecosystem and the following groups of organisms. Put the name of the group beside the appropriate letter (the second column of the following chart). More groups of organisms can match a letter. Not all groups need to be used. (3 points)

Decomposers/ Producers / Herbivores / Predators / Omnivores / Parasites of plants

<table>
<thead>
<tr>
<th>Elements of ecosystem (name of the group of organism)</th>
<th>Letters of case species</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td></td>
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<tr>
<td>Z</td>
<td></td>
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</tbody>
</table>
6. Match the following living organisms and groups "X", "Y" and "Z". Put the letter of the organism in the appropriate cell of the third column of the chart. (5 points)

E) *Earthworm* digests the remains of dead plants and animals in the soil.
F) *Species of aphids* (*) stick their sucking mouth-parts into the phloem of plants.
G) *Species of broomrapes* (**) do not contain chloroplasts, they deprive roots of other plants of organic materials.
H) *Species of blue bacteria (Cyanobacteria)* do not contain chloroplasts, but they are able to photosynthesize.
I) Some *humans* are vegetarians, but the majority eat food of both animal and plant origin.

* aphid = levélű
** broomrape = vajvirág

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<th>5.</th>
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<th>Total</th>
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</table>

**VI. Water balance in our body** 8 points

In an investigation the relationship between the life styles (eating and drinking habits) of secondary school students and the water balance of their bodies was studied on a standard school-day. Results can be read in the following tables.

<table>
<thead>
<tr>
<th>Ways of water loss</th>
<th>Amount (cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine</td>
<td>1700</td>
</tr>
<tr>
<td>Exhalation</td>
<td>475</td>
</tr>
<tr>
<td>Sweat</td>
<td>525</td>
</tr>
<tr>
<td>X</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ways of water gain</th>
<th>Amount (cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>625</td>
</tr>
<tr>
<td>Drink</td>
<td>1750</td>
</tr>
<tr>
<td>Y (a biochemical process)</td>
<td>425</td>
</tr>
</tbody>
</table>

1. What does "X" represent in this table? Put the letter of the correct answer in the empty box (1 point)
A) Tear
B) Faeces
C) Intestinal juice
D) Saliva
E) Aqueous humour

2. What does "Y" represent in this table? (1 point)
A) Inhalation
B) Fermentation
C) Stiffness (muscle pain)
D) Biological oxidation
E) Digestion of proteins
3. Is the water balance of this person in a state of equilibrium? Support your answer with calculation.

(1 point)

4. Which organ of mammals is the most important in the regulation of water balance?
Put the letter of correct answer in the empty box.

(1 point)

A) Skin
B) Large intestine
C) Lungs
D) Kidneys
E) Liver

5. Which ways of water loss listed above increase during a physical education class?

(1 point)

- .................................................................
- .................................................................

6. What happens to the body, if a heavy loss of water is not properly compensated with liquids? Put the letters of the correct answers in the boxes.

(1 point)

A) A The amount of urine decreases and contains higher concentration of salt
B) Cell respiration stops
C) Secretion of sweat stops
D) The body requires sweets
E) Water reabsorption in the large intestine intensifies

7. It is important to take the proper amount of fluids in our body, because the body gets rid of toxic metabolic wastes by means of urination, too. Which row of the following chart represents the correct pathway of urea? Put the letter of the correct answer (row) in the empty box.

(1 point)

<table>
<thead>
<tr>
<th>The nutrient from which nitrogen of urea originates</th>
<th>The site of urea-formation</th>
<th>The site where urea gets into urine from the bloodstream</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Protein</td>
<td>Kidney</td>
</tr>
<tr>
<td>B</td>
<td>Lipid</td>
<td>Liver</td>
</tr>
<tr>
<td>C</td>
<td>Protein</td>
<td>Liver</td>
</tr>
<tr>
<td>D</td>
<td>Lipid</td>
<td>Kidney</td>
</tr>
<tr>
<td>E</td>
<td>Protein</td>
<td>Kidney</td>
</tr>
</tbody>
</table>
8. Which of the following is considered to be the role of water in the human body? Put the letters of the correct answers into the empty boxes.

(1 point)

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<tbody>
<tr>
<td>A) Solvent of lipids</td>
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<td>B) Solvent of vitamin D and E</td>
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<td>C) Participant of chemical reactions</td>
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<td>D) Component of blood plasma</td>
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<td>E) Source of energy</td>
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**VII. The human nervous system**

10 points

Compare two parts of the human nervous system. Write the letter of the correct answer in the blank cells of the table.

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<td>A) Central nervous system</td>
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<td>B) Peripheral nervous system</td>
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<td>C) Both</td>
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<td>D) None</td>
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1. Neurons are organized into ganglia in this.
2. Synapses work in this.
3. Nerve fibres form tracts in this.
4. Neurons are organized into nuclei in this.
5. Nerve fibres form nerves is this.
6. Spinal nerves and cranial nerves are parts of this.
7. It includes the brain and the spinal cord.
8. Memory cells are typical cells of this.
9. The CO₂-sensitive chemoreceptors that trigger inhalation belong to this.
10. The stretch-sensing mechanoreceptors of the lungs that trigger exhalation belong to this.
VIII. Human body height  

Francis Galton, an English mathematician and biologist, studied first scientifically the quantitative traits in the 19th century. The following excerpt and figure 1. are quotations from his book "Hereditary Genius”. After examining the text and the figure answer the questions.

"Imagine one million people standing with their backs to a tall pole one after the other and their heights marked with a point on the pole. The pole will show a picture like the one on the attached diagram. The mean (average) height is the line that divides points into two equal parts - in this presumed case it corresponds to sixty-six inches. As the diagram shows, points are arranged on both sides of the diagram in such a regular way that the lower half is almost a perfect mirror image of the upper half.”

Francis Galton : Hereditary Genius (1869)

1. Representing Galton’s data in a coordinate system we get a graph like in Figure 2. What do axes X and Y represent? (1 point)
   - Axis X: ........................................................................................................
   - Axis Y: ........................................................................................................

2. The mean adult body height has increased since the 19th century – without changing the shape of curve or the extent of deviation. Calculate the mean body height in a present-day population, if the mean height has increased by 10 percent since the age of Galton. Show your calculations too. (1 point)
3. What kind of curve would show the present-day distribution of body heights? Draw it in the graph on Figure 2. (Exact values should not be represented, only the direction of changes.) (1 point)

Human body height is a typical quantitative characteristic. What is its inheritance like? Before giving answers, study the Figures 3. and 4. Put a letter "T" after true statements and a letter "F" after false statements.

Figure 3.

Figure 4.

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IX. Advices to first-aid

It may happen to anyone and anywhere that quick assistance should be given to somebody in an emergency. In the following section we composed some advices. *Put the missing keywords chosen from the given list into the sentences. There are three unnecessary terms you do not have to use.*

**pressure/compression bandage**  **serious external bleeding**  **fracture of bone**

**bacteria**  **forward**  **carbon-dioxide**  **burn**

**nose-bleed**  **backwards**  **sterile adhesive bandage**

In the case of (1) .............................................. call upon the person to lean his/her head slightly (2)............................. and support it. In this way the flow of blood into the lower respiratory tract can be avoided. Put a cold compress on the back of the neck.

In the case of (3) .......................................... on someone’s limb, put the patient down in a horizontal position and, if no (4) ................................. can be detected, lift up or support the limb. Heavy bleeding can be arrested by means of (5) .............................................. .

The main purpose of this is to block bloodflow towards the site of bleeding. The wound should be covered by sterilized gauze (= a light dressing) to prevent (6) ...................... from getting into the bloodstream. Do not remove any foreign body (for instance glass splinter). Try to find medical care for the wound as soon as possible.

In the case of  (7) ............................... the damaged body-part should be washed cautiously with abundant cold water for 10-15 minutes. Then cover the injured skin completely with a sterile dressing. The water cools down the injured body-part and the dressing prevents open wound from getting infected. See a doctor as soon as possible.

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<td>I. Living organisms and ways of life</td>
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<td>II. Mushroom poisoning</td>
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<td>III. The structure and function of a leaf</td>
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<td>IV. Dragonflies</td>
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<td>V. The cycle of matter and flow of energy through an ecosystem</td>
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<tr>
<td>VI. Water balance in our body</td>
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<td>VII. The human nervous system</td>
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<td>VIII. Human body height</td>
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<td>IX. Advices to first-aid</td>
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<td><strong>Total</strong></td>
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Total score for the written part of exam (achieved points *1.25) = 80 * 1.25 = 100

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Student's score:

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Examiner/ Javító tanár

Registrar of the Board of Examiners/ Jegyző

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Date / Dátum: ..............................................