BIOLÓGIA
ANGOL NYELVEN

EMELT SZINTŰ ÍRÁSBELI
ÉRETTSÉGI VIZSGA

JAVÍTÁSI-ÉRTÉKELÉSI
ÚTMUTATÓ

OKTATÁSI ÉS KULTURÁLIS
MINISZTÉRIUM
Instructions - How To Mark The Advanced Level Paper

1. Always use **red ink**.
2. If the answer to question is complete tick correct answers. **Each tick** is equivalent to **1 point**. You can not give half the point. Indicate with two ticks, if the candidate answered correctly an assignment of two points.
3. Please accept the answer, if it is correct, but not mentioned in the Answer Key. The same procedure should be applied in the case of synonyms (e.g.: *platelets* – *thrombocytes*).
4. In the Answer Key equally acceptable answers are separated with **backslash (/)** from one another.
5. At the end of the assignment **add the points up** in the grey-coloured chart.
6. At the end indicate the detailed points for each assignment **in the final summary chart** and add them up to indicate the total score.
7. In the optional essay questions **mark correct answers by a tick** on the margin of the page. The Answer Key contains only key content elements, terms and phrases in logical order. Please accept compositions with different order but with logical structure – unless the instruction of the questions tells the contrary. Finally please add up the points of the correct answers and write in the appropriate box (X.) of the **final summary chart**.
   In the essay question point can be awarded only for those answers which respond to the guiding questions.
8. If the candidate worked on both optional questions (A and B) then the instructions in ”instructions for Candidates” are to be applied.
9. If the candidate was asked **to compose whole sentences** (e.g.: giving reasons or explanations) – only grammatically correct sentences are acceptable. Please, **do not deduct points for spelling mistakes, yet do not accept misleading compositions**.

We wish you a successful work.
I. The importance of some inorganic molecules in the living world  10 points
This assignment is based on the following chapters of the Detailed Requirements: 2.1.1., 2.1.4., 2.2.2., 2.2.3, 4.5.2, 4.5.4, 4.6.1, 5.3 and 5.4.1.

Each correct answer: 1 point. No point can be given for a number put in two places.

II. Microorganisms  9 points
This assignment is based on the following chapters of the Detailed Requirements: 2.2.3, 3.2.1., 3.2.2 and 5.4.1. Each correct answer: 1 point.

1. prokaryote
2. autotrophic
3. yes / yes it does
4. heterotrophic
5. water / H₂O
6. eukaryote
7. heterotrophic
8. carbon dioxide / CO₂
9. not / no, it does not
III. Segmented worms and insects 7 points
This assignment is based on the following chapter of the Detailed Requirements: 3.4.2

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<td>6</td>
<td>C</td>
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<td>7</td>
<td>D</td>
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IV. Forests and meadows of clearings 9 points
This assignment is based on the following chapter of the Detailed Requirements: 5.2.2

1. A beech forest
2. Protection against winds/ against dehydration/ cross-fertilisation/ microclimate (any of these).
3. Shading/ struggle for water, for minerals. (any of these)
4. Dewberry, Greater Celandine
5. Rustyback
6. Asarabacca, Large Yellow Oxeye
7. A.

V. Broken mitochondria 9 points
This assignment is based on the following chapters of the Detailed Requirements: 1.3., 2.2.3., 2.3., 2.3.3. Source of the picture: Bánkut-Both-Csorba: A kísérletező ember. Kairosz, 2006.

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<td>8</td>
<td>C</td>
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<td>9</td>
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</table>
VI. Trachea and oesophagus 5 points
This assignment is based on the following chapters of the Detailed Requirements: 4.4.2., 4.5.1

1. A  
2. B  
3. B  
4. A  
5. D

VII. Ventricle of the heart 8 points
This assignment is based on the following chapter of the Detailed Requirements: 4.6.3

Source of picture: Kiss János: Élettan. Typotex, 2004

1. T  
2. F  
3. T  
4. T  
5. F  
6. F  
7. F  
8. T

VIII. Peppered nerve endings 6 points
This assignment is based on the following chapters of the Detailed Requirements: 2.1.1., 2.1.5., 2.3.1., 4.4.2., 4.8.1., 4.8.4. and 4.9.2.

1. A  B  1 point
2. A  C  1 point
3. E  1 point
4. C  D  1 point
5. Anterior pituitary/ Anterior lobe of the pituitary gland. 1 point
   Point can only be given if lobe is mentioned.
6. A  D  1 point

IX. Three types of learning  
6 points

This assignment is based on the following chapter of the Detailed Requirements: 4.8.2. Each correct answer is awarded by 1 point.

1. E
2. AE
3. AD
4. AE
5. D
6. Animal or human makes a decision on more behavioural elements collectively. / Insight learning demands thinking / Combination of given elements is not random during insight learning. Any other correct phrasings are acceptable, but “the whole is more than the sum of its parts” should be the essence.

Sources of pictures
Bánkuti-Both-Csorba: A kísérletező ember Kairosz, 2006
Source of text:
Alaklélektan Gondolat, 1974

X. Sickle cell anaemia  
11 points

This assignment is based on the following chapters of the Detailed Requirements: 4.6.1., 6.1.2. and 6.2.1.

1. red blood cell / erythrocyte/ red blood corpuscle 1 point
2. Low-level efficiency/ asphyxia (shortage of O₂) / exhaustion / insufficient oxygen supply of cells. Any other correct phrasings with the same meaning are acceptable 1 point
3. Autosomal disease, because disease affected both male and female children / both son and daughter were affected. 1 point
4. No, it isn’t, because affected (ill) children could be born only if both parents were heterozygous, so at least two mutations should have happened. (explanation is required) 1 point
5. 0.25 (25%), because this is the probability to get healthy alleles from both parents. (Explanation is required. Punnett square is also acceptable.) 1 point
6. The frequency of healthy individuals, p² = 0.81. Therefore p = 0.9 and q = 0.1. The frequency of heterozygous adults (being resistant to malaria): 2pq = 0.18 (18%) 1 point
7. q² = 0.01 (1%) 1 point
8. No, we can not, strong selection works (partially due to malaria and to the homozygous form of the disease.) 1 point
Optional questions

XI.A  Blood sugar level and diabetes  20 points

Essay

This assignment is based on the following chapters of the Detailed Requirements: 4.7.1. and 4.8.4.

Insulin
produced by pancreatic islets /islets of the pancreas  1 point
stimulates  1 point
storage of glycogen in liver,  1 point
stimulates storage of fats  1 point
and stimulates glucose uptake / oxidation in tissues  1 point

Adrenaline of the adrenal medulla, /
hormones of the adrenal cortex affecting carbohydrate balance (glucocorticoids),/
thyroxine produced by the thyroid gland,/
growth hormone (STH) produced by the anterior pituitary.
Any two of these (names of the hormone and gland are required)  4 points

There is no sugar in the urine of a healthy person.  1 point
A seriously diabetic's urine contains sugar /glucose  1 point
Total amount of glucose gets into the primary filtrate (tubular fluid),  1 point
but it is completely reabsorbed  1 point

Because the osmotic concentration of his/her blood is high.  1 point
Itching skin, slow healing of wounds, wrong pH value of blood (acidosis),
acetone breath (ketosis), weakness, confusion, coma, damaged endothelium,
weak eyesight - 3 examples  3 points

(It can be treated) with insulin and  1 point
with strict diet  1 point

Total  20 points
**XI B. Nutrition in plants – essay**  
20 points

This assignment is based on the following chapters of the Detailed Requirements: 1.3, 2.1.1., 3.4.3 and 5.1.1.

On the basis of their carbon-source, plants are **autotrophic** creatures, because they use **inorganic carbon compounds** in order to build up their organic compounds. *(Mentioning light energy as an explanation by itself can not be accepted.)*

They must take up **water**, **carbon dioxide** and **dissolved minerals (salts):**

<table>
<thead>
<tr>
<th>Cations: iron ion</th>
<th>enzymes, proteins of the electron transport chain / magnesium ion</th>
<th>chlorophyll / potassium ion</th>
<th>ability to absorb water, photosynthesis calcium ion</th>
<th>growth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>It is enough to mention one example</td>
<td></td>
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</table>

two examples: 2 points

<table>
<thead>
<tr>
<th>root – zone of absorption, through the <strong>root hairs</strong></th>
<th>1 point</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>water and minerals (salts)</strong></td>
<td>1 point</td>
</tr>
<tr>
<td>leaves – <strong>through stomata</strong></td>
<td>1 point</td>
</tr>
<tr>
<td><strong>uptake of carbon dioxide</strong></td>
<td>1 point</td>
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</tbody>
</table>

Methods of transport:  
**passive transport** -  
diffusion e.g. carbon dioxide  
osmosis e.g. water  
**active transport** – mineral ions (salts)

In plants, the uptake of other nutrients is proportional to the amount of the most limited / scarcest nutrient.  
This rule is known as the **Law of the Minimum** by **Liebig** / or **Liebig’s Law**

<table>
<thead>
<tr>
<th>Total</th>
<th>20 points</th>
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Irásbeli vizsga 0802  8 / 8  2008. május 16.