








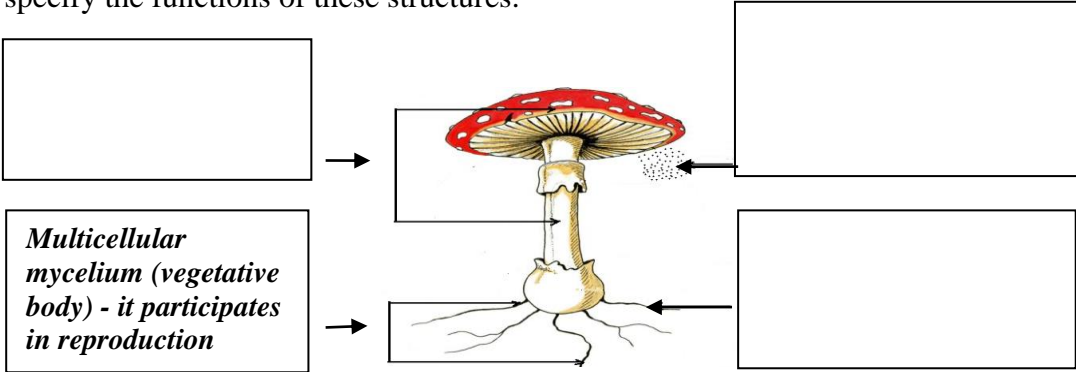








№	ITEMS	Score													
Diversity in the living world and evolutionary characteristics of the living world															
1.	<p>On Earth, there are a huge number of species of living organisms. Over the course of evolution, all species have developed unique traits. Currently, scientists use these differences to classify organisms into groups using various systematic units. The taxonomy of living organisms is based on two principles: binary nomenclature and hierarchy. <i>Analyse the images below.</i></p> <p>a) Fill in the blank spaces in the table with the names of the taxons to which the species represented in the image belong.</p> <table border="1" data-bbox="220 1361 1342 1984"> <tbody> <tr> <td data-bbox="220 1361 501 1686" style="text-align: center;">Species</td> <td data-bbox="501 1361 782 1686" style="text-align: center;">  Porcino <i>(Boletus edulis)</i> </td> <td data-bbox="782 1361 1062 1686" style="text-align: center;">  Common oak <i>(Quercus robur)</i> </td> <td data-bbox="1062 1361 1342 1686" style="text-align: center;">  Red squirrel <i>(Sciurus vulgaris)</i> </td> </tr> <tr> <td data-bbox="220 1686 501 1834" style="text-align: center;">Phylum</td> <td data-bbox="501 1686 782 1834"></td> <td data-bbox="782 1686 1062 1834"></td> <td data-bbox="1062 1686 1342 1834" style="text-align: center;"><i>Chordates</i></td> </tr> <tr> <td data-bbox="220 1834 501 1984" style="text-align: center;">Kingdom</td> <td data-bbox="501 1834 782 1984"></td> <td data-bbox="782 1834 1062 1984"></td> <td data-bbox="1062 1834 1342 1984"></td> </tr> </tbody> </table>	Species	 Porcino <i>(Boletus edulis)</i>	 Common oak <i>(Quercus robur)</i>	 Red squirrel <i>(Sciurus vulgaris)</i>	Phylum			<i>Chordates</i>	Kingdom				L 0 1 2 3 4 5	L 0 1 2 3 4 5
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Phylum			<i>Chordates</i>												
Kingdom															

<p>2.</p>	<p>I. Fill in the blank spaces in the scheme with the structural parts of the cap fungus and specify the functions of these structures.</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; width: 150px; height: 50px; margin-right: 10px;"></div> <div style="margin-right: 10px;">→</div>  <div style="margin-left: 10px;">←</div> <div style="border: 1px solid black; width: 150px; height: 50px; margin-left: 10px;"></div> </div> <p style="margin-top: 10px;">II. List two similarities between fungi and animals.</p> <p>1. _____</p> <p>2. _____</p>	<p>L</p> <p>0</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p>	<p>L</p> <p>0</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p>															
<p>3.</p>	<p>Complete the table with the differences between Crustacea class and Insecta class.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #e0e0e0;"> <th style="width: 33%;">Crustacea</th> <th style="width: 33%;">Criteria</th> <th style="width: 33%;">Insecta</th> </tr> </thead> <tbody> <tr> <td></td> <td>Number of body regions</td> <td></td> </tr> <tr> <td></td> <td>Respiratory organs</td> <td></td> </tr> <tr> <td></td> <td>Excretory organs</td> <td></td> </tr> <tr> <td style="text-align: center;">  </td> <td>The role of these representatives in nature</td> <td style="text-align: center;">  </td> </tr> </tbody> </table>	Crustacea	Criteria	Insecta		Number of body regions			Respiratory organs			Excretory organs			The role of these representatives in nature		<p>L</p> <p>0</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p>	<p>L</p> <p>0</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p>
Crustacea	Criteria	Insecta																
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	Excretory organs																	
	The role of these representatives in nature																	
<p>4.</p>	<p>The biological progress of a species can be achieved in different ways.</p> <p>a) Name two other ways of biological progress</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> Ways of biological progress </div> <div style="margin-right: 10px;">→</div> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> <i>Aromorphosis</i> </div> <div style="margin-right: 10px;">→</div> <div style="border: 1px solid black; width: 150px; height: 20px; margin-right: 10px;"></div> <div style="margin-right: 10px;">→</div> <div style="border: 1px solid black; width: 150px; height: 20px;"></div> </div> <p>b) Note an example of aromorphosis present in both birds and mammals, which ensures homeothermy.</p> <p>_____</p>	<p>L</p> <p>0</p> <p>1</p> <p>2</p> <p>3</p>	<p>L</p> <p>0</p> <p>1</p> <p>2</p> <p>3</p>															

Vital systems and processes

5. Write the essence of the definitions for the following biological terms:
Neuron - _____

Immunity - _____

L	L
0	0
1	1
2	2
3	3
4	4

6. The images below represent an analyzer of the human sensory system. **Analyze** the image below.

L	L
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11

a) Write the names of the structures, corresponding to the numbers in picture **A**.

<p>1. _____</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p>	<p>5. _____</p> <p>6. _____</p> <p>7. _____</p>
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b) Underline the type of receptors characteristic of the identified analyzer:

1) chemoreceptors 2) mechanoreceptors 3) thermoreceptors 4) photoreceptors

c) Name the acoustic receptor, which transforms sound waves into nerve impulses, represented in image **B**.

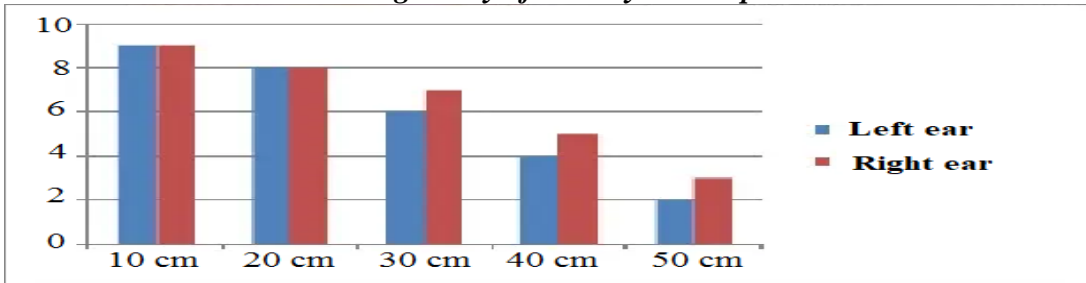
d) Write the function of the structure indicated in the image with the number **4**.

e) Name the lobe of the brain, which elaborates sensations in response to the action of sound waves (*image C*).

7. Hearing acuity is a measure of hearing that characterizes the ability to hear a faint sound or to distinguish between a minimal change in sound volume and intensity.

The diagram below represent the interdependence between the distance at which sounds are perceived by the right and left ear. *Analyze* the diagram and *solve* the proposed tasks.

Hearing acuity of an 18-year-old person



a) Write the values of the distances, at which both ears have equal hearing acuity.

b) Identify the ear which suffers from hearing loss, based on the data in the diagram.

c) Write two factors that lead to hearing loss.

- _____
- _____

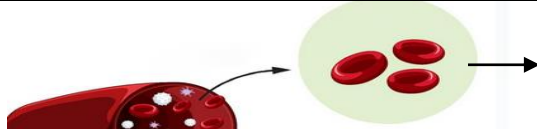
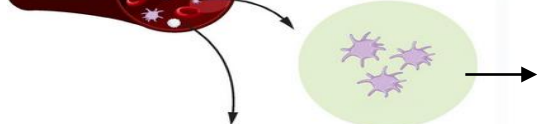
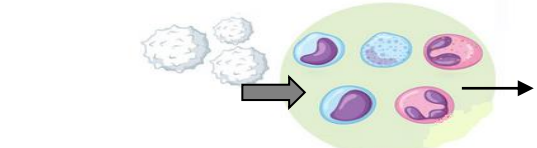
d) Write a recommendation for teenagers, who listen to music with headphones, to prevent hearing damage.

- _____

L L
0 0
1 1
2 2
3 3
4 4
5 5

8. Blood is a connective tissue, a vitally important fluid for the body. It is composed of blood cells suspended in blood plasma.

a) Write the name and the functions of the blood cells, represented in the image.

Blood cells	Name	Function
	1.
	... <i>Platelets</i>	1.
	1.

b) Name the blood cells, to the surface of which antigens A and B are attached.

L L
0 0
1 1
2 2
3 3
4 4
5 5
6 6

9.	<p>The image represents two anatomical-functional routes of the circulatory system.</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>A</p> </div> <div> <p>a) Name the type of blood circulation, indicated in the image with the letter: A - _____ B - _____</p> </div> </div> <div style="display: flex; align-items: center; margin-top: 20px;"> <div style="margin-right: 20px;"> <p>B</p> </div> <div> <p>b) Write the types of blood vessels, represented in the image with numbers: 1 - _____ 2 - _____ 3 - _____</p> </div> </div> <p>c) Name the protein that transports O₂ and CO₂ to the tissues and lungs. _____</p> <p>d) Write a factor, which ensures the exchange of respiratory gases between alveoli / tissues and blood. _____</p>	L 0 1 2 3 4 5 6 7	L 0 1 2 3 4 5 6 7
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10.	<p>The image represents blood smears.</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> </div> <div> <p>a) Circle the image that indicates the presence of anemia in humans. b) Write a cause of anemia in humans. 1. _____ _____</p> <p>c) Write two clinical characteristics of anemia. 1. _____ 2. _____</p> </div> </div>	L 0 1 2 3 4	L 0 1 2 3 4
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Basis of genetics and organism improvement/genetic engineering

11.	<p>I. Write in the provided space the definition for the following biological term: Chromosome - _____ _____</p> <div style="display: flex; align-items: center; border: 1px solid black; padding: 5px;"> <div style="margin-right: 20px;"> <p>II. Select the correct answers that specify the type of chromosomal mutation represented in the adjacent image.</p> <p>a) structural c) numerical b) polyploidy d) aneuploidy</p> </div> <div> </div> </div>	L 0 1 2 3 4	L 0 1 2 3 4
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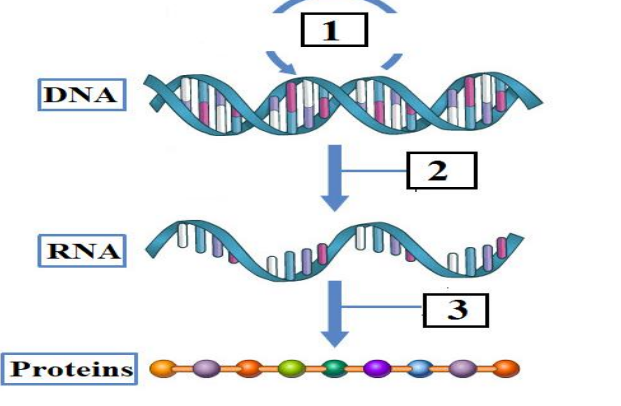
L L
0 0
1 1
2 2
3 3
4 4
5 5
6 6
7 7
8 8
9 9
10 10
11 11
12 12

12. **Nucleic acids** are the key macromolecules of the cell that store and transmit hereditary information about the functioning of the cell. They are the basis for the genetic development of all life forms.

I. Complete the table with the particularities of nucleic acids.

DNA 	Comparison criteria	 RNA
	The number of chains	
	The name of the carbohydrate	
	Specific nitrogenous base	

II. Analyze the image below.

	<p>a) Complete the legend with the names of the processes represented in the image.</p> <p>1 – <i>replication</i> _____</p> <p>2 - _____</p> <p>3 - _____</p>
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b) The sequence of amino acids in a protein molecule is determined by the sequence of nucleotides located in the DNA in the form of triplets.

Name the property of the genetic code, according to which *more than one triplet can code for a particular amino acid*.

III. Read the text and *solve* the tasks.

This syndrome is one of the most widespread chromosomal diseases. The cause of this pathology is the presence of an extra autosomal chromosome. People with this disease have certain clinical characteristics: mongoloid face, short stature, brachydactyly, mental retardation, etc.



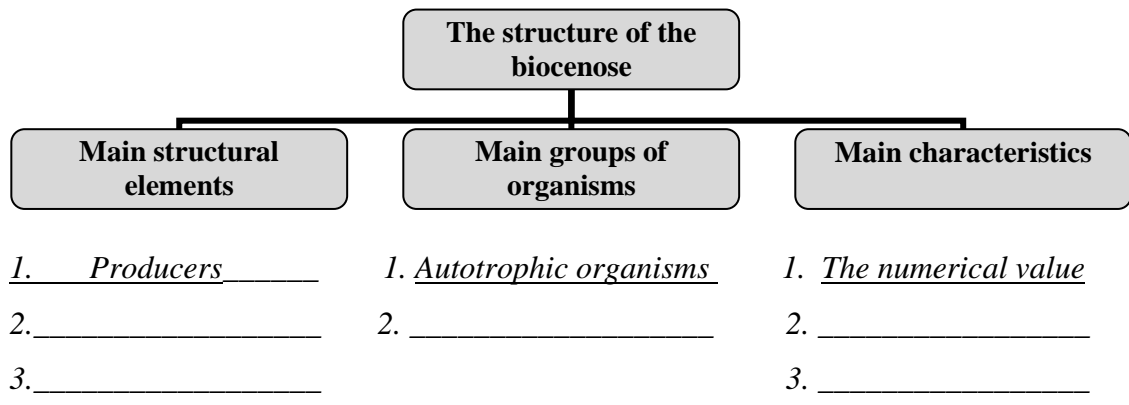
- a) **Name** the syndrome described in the text. _____
- b) **Write** the chromosome pair affected. _____
- c) **Write** the karyotype of the person with the identified syndrome. _____

Ecology and environmental protection

14. I. Write in the provided space the definition for the following biological term:
Biosphere - _____

L	L
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12

II. a) Fill in the schema below „Structure of biocenosis”



b) Note the role of producers in the carbon cycle in nature.

c) Write a reason for the increase in biomass in terrestrial ecosystems from the poles to the equator.

d) Conservation of Earth's biodiversity is a necessary condition for the human survival and the sustainable development of the biosphere.

Argue the need to establish nature reserves for the conservation of plant and animal biodiversity in the Republic of Moldova.

