























№	ITEMS	Score																					
Diversity in the living world																							
1.	<p>I. Write down the name of the taxonomic rank to which the ladybug belongs, by selecting the terms from the series provided: <i>Arthropods, Animals, Eukaryotes, Vertebrates, Insects</i> Note! One of the taxons in the list above is extra.</p> <table border="1"> <tr> <td>a) Domain: _____</td> <td rowspan="5" style="text-align: center;"></td> </tr> <tr> <td>b) Kingdom: _____</td> </tr> <tr> <td>c) Phylum: _____</td> </tr> <tr> <td>d) Class: _____</td> </tr> <tr> <td>e) Species: ladybug (<i>Coccinella septempunctata</i>)</td> </tr> </table> <p>II. The images below show the developmental cycle of the ladybug.</p> <table> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">⇒</td> <td style="text-align: center;"></td> <td style="text-align: center;">⇒</td> <td style="text-align: center;"></td> <td style="text-align: center;">⇒</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;">1</td> <td></td> <td></td> <td></td> <td style="text-align: center;">3</td> <td></td> <td style="text-align: center;">4</td> </tr> </table> <p>a) Write down the type of development shown in the picture. _____</p> <p>b) Write the names of the development stages: 1- _____ 2- _____ 3- Pupa _____ 4- _____</p>	a) Domain: _____		b) Kingdom: _____	c) Phylum: _____	d) Class: _____	e) Species: ladybug (<i>Coccinella septempunctata</i>)		⇒		⇒		⇒		1				3		4	L	L
a) Domain: _____																							
b) Kingdom: _____																							
c) Phylum: _____																							
d) Class: _____																							
e) Species: ladybug (<i>Coccinella septempunctata</i>)																							
	⇒		⇒		⇒																		
1				3		4																	
		0	0																				
		1	1																				
		2	2																				
		3	3																				
		4	4																				
		5	5																				
		6	6																				
		7	7																				
		8	8																				

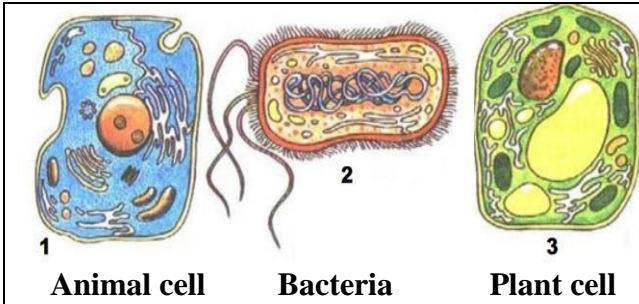
2.	Vertebrates are the most advanced chordates. The pictures below show some representatives of the vertebrate classes. Write down the number of chambers of the heart in the vertebrates in the schema:	L	L
		0	0
		1	1
		2	2
		3	3
		4	4
5	5		
			
A - _____ B - _____ C - _____ D - _____ E - _____			

3.	<p>a) Complete the table with the differences between the Bony Fish class and the Birds Class.</p> <table border="1"> <thead> <tr> <th></th> <th>Bony Fish</th> <th>Criteria of difference</th> <th>Birds</th> <th></th> </tr> </thead> <tbody> <tr> <td>1.</td> <td></td> <td>Specific features of the skin/integument</td> <td></td> <td>1.</td> </tr> <tr> <td>1.</td> <td></td> <td>Organs of locomotion</td> <td></td> <td>1..... 2.....</td> </tr> <tr> <td>1.</td> <td></td> <td>Respiratory organs</td> <td></td> <td>1.</td> </tr> <tr> <td>1.</td> <td></td> <td>Type of fertilization</td> <td></td> <td>1.</td> </tr> </tbody> </table> <p>b) Write down the positive role of birds in artificial ecosystems (1) and fish in natural ecosystems (2).</p> <p>1. _____</p> <p>_____</p> <p>2. _____</p> <p>_____</p>		Bony Fish	Criteria of difference	Birds		1.		Specific features of the skin/integument		1.	1.		Organs of locomotion		1..... 2.....	1.		Respiratory organs		1.	1.		Type of fertilization		1.	L	L
			Bony Fish	Criteria of difference	Birds																							
		1.		Specific features of the skin/integument		1.																						
		1.		Organs of locomotion		1..... 2.....																						
		1.		Respiratory organs		1.																						
		1.		Type of fertilization		1.																						
		0	0																									
		1	1																									
		2	2																									
		3	3																									
		4	4																									
		5	5																									
6	6																											
7	7																											
8	8																											
9	9																											
10	10																											
11	11																											

Vital systems and processes

4.	<p>Write in the space below the essence of the term:</p> <p><i>Cell</i> - _____</p> <p>_____</p> <p><i>Reproduction</i>- _____</p> <p>_____</p> <p>_____</p>	L	L
		0	0
		1	1
		2	2
		3	3
		4	4

5. The images represent prokaryotic and eukaryotic cells.



a) **Complete** the legend with the numbers corresponding to the cells:

Prokaryotes - _____

Eukaryotes - _____

L
0
1
2
3
4
5
6
7
8

L
0
1
2
3
4
5
6
7
8

b) Column **A** lists *examples of organisms*, while column **B** - *various types of reproduction and their characteristics*. In the space provided, **write in** the numbers from column **B** that correspond to the according terms from column **A**.
The numbers will be used only once.

Column A	Column B
Dysenteric amoeba _____	1. Sexual, external fertilization
Common water frog _____	2. Sexuality, internal fertilization
Tulip _____	3. Asexual, by binary fission
Swan _____	4. Asexual, by budding
Fresh water hydra _____	5. Asexual, through bulbs.

6. a) **Form** triads of notions, which refer to metabolism, by selecting terms from the suggested list:

plastic metabolism, ATP, ribosomes, energy metabolism, protein synthesis, mitochondria,

while following the specified order:

Type of metabolism → *cellular organelle* → *organic compounds*

_____ → _____ → _____

_____ → _____ → _____

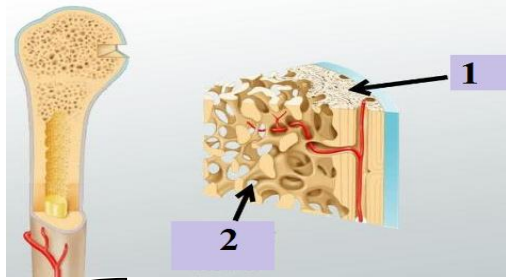
L
0
1
2
3
4
5
6
7
8

L
0
1
2
3
4
5
6
7
8

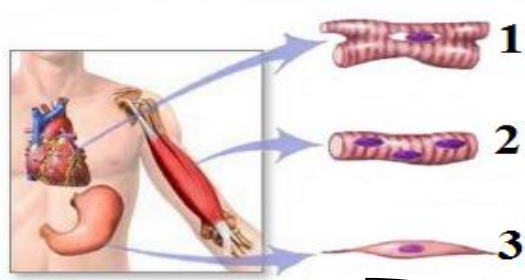
b) **Underline** the term that does **not** belong into the thematic group regarding to various *types of plant organs*. **Argue** in one sentence the **selection decision** and the **decision to associate** the other biological terms.

Leaf
Flower
Root
Stem

c) The images below represent different types of animal tissues.
Write down the name of the identified tissues.



Bone tissue



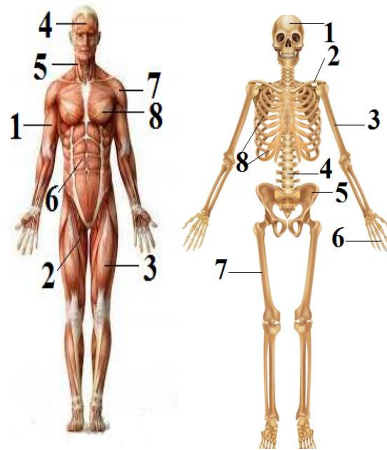
Muscle tissue

1 – compact
 2 – _____

1 – cardiac striated muscle
 2 – _____
 3 – _____

7. The musculoskeletal system is composed up of muscles and bones.

a) **Note** 3 muscles
 (of your choice):



b) **Note** 3 bones
 (of your choice):

c) **Name** the protein responsible for muscle contraction.

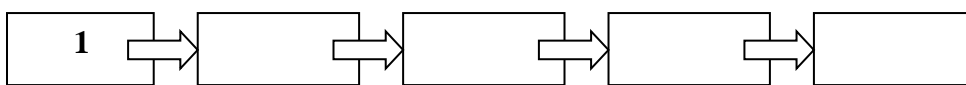
d) **Name** the hormone, secreted by the pituitary gland, which is responsible for the bone growth during childhood.

8. Skeletal muscles represent the effector organ of somatic reflexes. An example of a somatic reflex is the patellar reflex.

a) **Create** a logic chain which reflects the order of the components that participate in the body's response reaction, using the terms listed below.

Complete the diagram with the corresponding **numbers**.

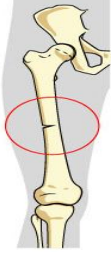
1. skin receptors; 2. quadriceps 3. central nervous system;
 4. sensory neurons; 5. motor neurons



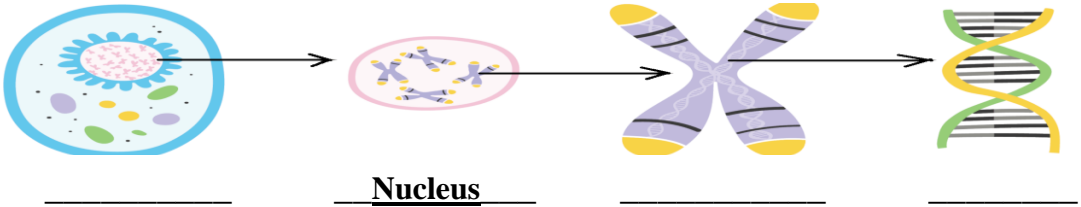

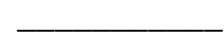
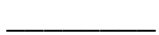
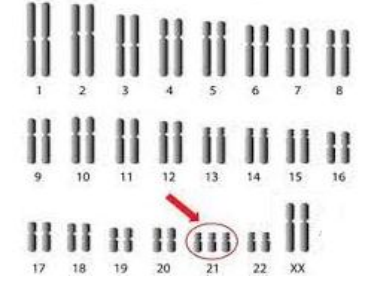
b) **Give** an example of a conditioned reflex.

L	L
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

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

9.	a) Write down the name of the disease, characterized by a reduction in bone density.	L	L	
	b) Write the name of the disease, characterized by bone deformity, caused by deficiency of calcium salts and vitamin D in children.	0	0	
		c) The image shows a bone fracture. Write down 2 steps in providing first aid to the person with the fracture.	1	1
		1. _____	2	2
		2. _____	3	3
		_____	4	4
		_____	5	5
		_____	6	6
		_____	7	7
		_____	8	8
_____		9	9	
_____		10	10	
d) Write two prophylaxis measures against bone demineralization.				
1. _____				
2. _____				
e) Write down two recommendations for the elderly to prevent injuries to the musculoskeletal system. Argue the recommendation.				
1. _____				
2. _____				

Basis of genetics and organism improvement/genetic engineering

10.	Identify the structures in the provided images. Fill in the blank spaces with the name of these structures.	L	L	
		0	0	
		1	1	
		2	2	
		3	3	
11.	I. The diagram below shows the pathological karyotype in humans.	L	L	
		Write down :		
		a) the name of the identified chromosomal pathology:	0	0
		_____	1	1
		b) type of affected chromosomes (<i>autosomes / heterosomes</i>)	2	2
		_____	3	3
		c) two distinctive phenotypic traits:	4	4
		1. _____	5	5
		2. _____	6	6
	_____	7	7	
_____	8	8		
II. a) Write down two heterosomal pathologies.				
1. _____				
2. _____				
b) Name two methods of study in human genetics.				
1. _____				
2. _____				

Ecology and environmental protection

13. Write down in the spaces below the names of levels of organization of living things.

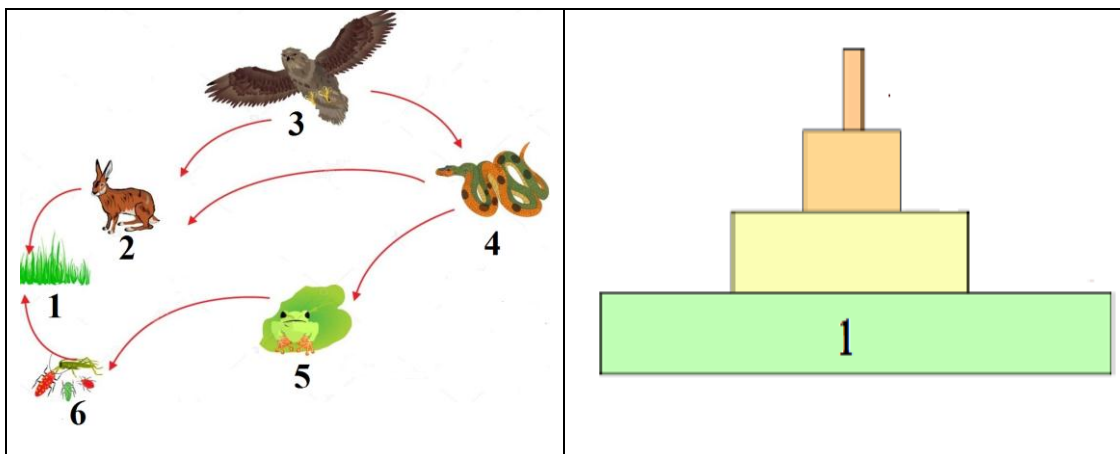


1. _____ 2. _____ 3. Biocenotic 4. _____

L	L
0	0
1	1
2	2
3	3

14. Analyze the food web represented in the image below.

a) According to the trophic levels, **fill in** the blank space in the ecological pyramid with the numbers of **three** secondary consumers, illustrated in the diagram below.



L	L
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

b) Name the structural element of the biocenosis, which is not represented in the food web.

c) Write the role of these organisms in the flow of matter in nature.

d) Forest fauna of the ecosystems of the Republic of Moldova includes mammals, reptiles, insects, birds, etc.
Note an example of anthropogenic pollutants, which can affect a forest ecosystem in the Republic of Moldova.

e) In accordance with the indicated polluting factor, **provide** an efficient solution to protect the animal biodiversity of this ecosystem. **Argue** the answer.

