№	ITEMS	Score	
Diversity in the living world and evolutionary characteristics of the living world			
1.	Analyse the images below. **Fill in** the blank spaces in the table with the names of the taxons to which the species represented in the image belong.	L 0 1 2 3 4 5 6	L 0 1 2 3 4 5 6

 Linden *(Tilia cordata L)*	**Species**	 **Hoopoe** *(Upupa epops)*
	Class	
	Phylum	
	Kingdom	

2. **Complete** the table with the **differences** between **Monocotyledons** class and **Dicotyledons** class.

Monocotyledons	Criteria	Dicotyledons
.....	**Root system type**	.....
.....	**Innervation of the leaf**	.....
……..	**Flower structure**	*Pentamer or tetramer*

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

3. **a) Describe** the role of the flower in the evolution of angiosperms.

_____
_____
_____

b) Write two other features of angiosperms, which demonstrates their superiority over conifers.

1._____
2._____

c) Provide two examples of idioadaptation of the conifers to low temperatures.

1……...

2……...

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

4. **a) Complete** the table with the distinctive features of the **birds**.

Structural features of the respiratory system	Peculiarities of the skeleton	Structural features of the excretory system
1. **2.**	**1.** **2.**	**1.**

b) Name an aromorphosis that led to the appearance of homeothermia in birds.

_____

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

Vital systems and processes

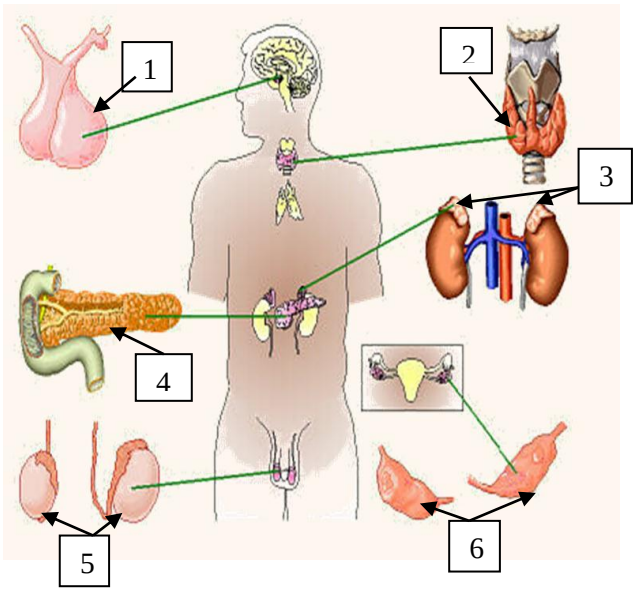
5. **a) Write** the essence of the definitions for the following biological terms:

Hormone- _____
_____

Metabolism- _____
_____

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

6. **Analyse the image below.**



a) Name the organ system represented in the picture.
_____

b) Write down the names of the structures in the drawing, according to the numbers in the image.
1_____

2._____

3._____

4._____

5._____

6._____

c) Name the endocrine gland (*illustrated in the image*) that has an immune function.

_____

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

7. **a) Complete** the table with the name of the glands, a secreted product and a function performed by the secreted product.

Organ	The name of the organ	The secreted product	Role / Function of the product
Endocrine gland	***Thyroid***		
Exocrine gland			*Moisturizing and decomposition of food*

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

b) Column **A** indicates the endocrine glands and column **B** - diseases caused by hormonal imbalances. **Write** in the provided space **A** the corresponding numbers from column **B**. *The numbers can be used only once.*

A	B
Pancreas _____ Pituitary _____ Thyroid _____ Adrenal glands _____	1. Addison disease 2. Diabetes 3. Basedow-Graves disease 4. Acromegaly

c) Argue the importance of proper nutrition in the prevention of diabetes.

_____
_____
_____

8. The pancreas is a mixed gland with double functions. The endocrine function of the pancreas is to secrete: glucagon, insulin etc. The exocrine function of the pancreas is to secrete: trypsin, pancreatic lipase, pancreatic amylase.

a) Complete the table with the name of the hormone secreted by the endocrine cells of the pancreas.

Pancreatic cells	**Secreted hormone**
Alpha cells	
Beta cells	

b) Complete the table with the names of the enzymes secreted by the pancreas.

Types of enzymes	**Enzyme**
Proteolytic enzymes	
Lipolytic enzymes	*Pancreatic lipase*
Glycolytic enzymes	

c) Name the segment of the small intestine into which the pancreatic juice is eliminated.

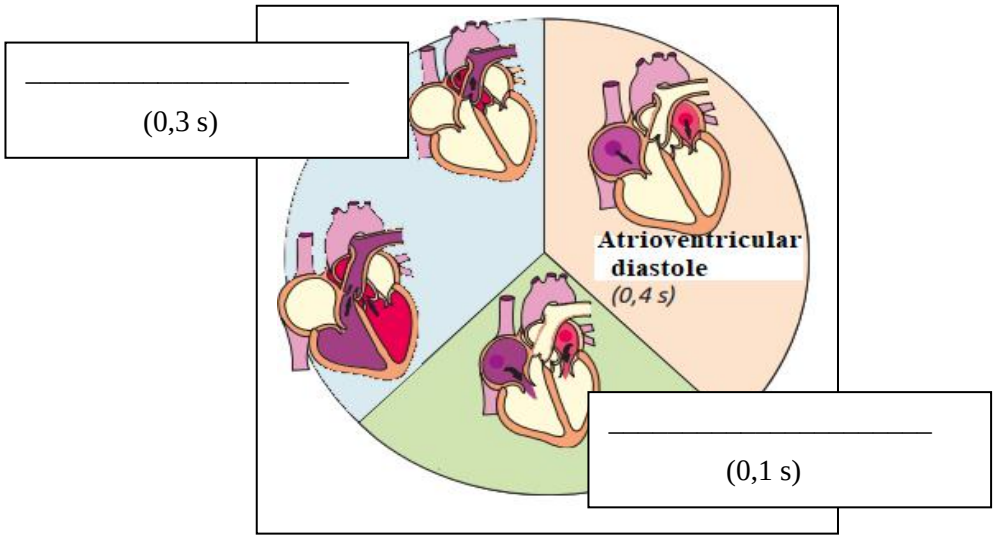
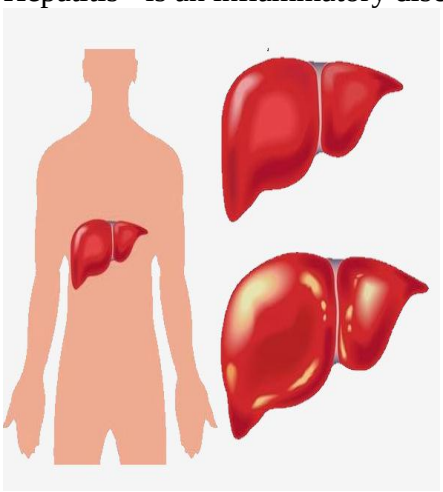
_____

d) Name two adnexal glands of the digestive tract which are located in the abdominal cavity. **Indicate** a function for each of these glands.

1._____
_____
2._____
_____

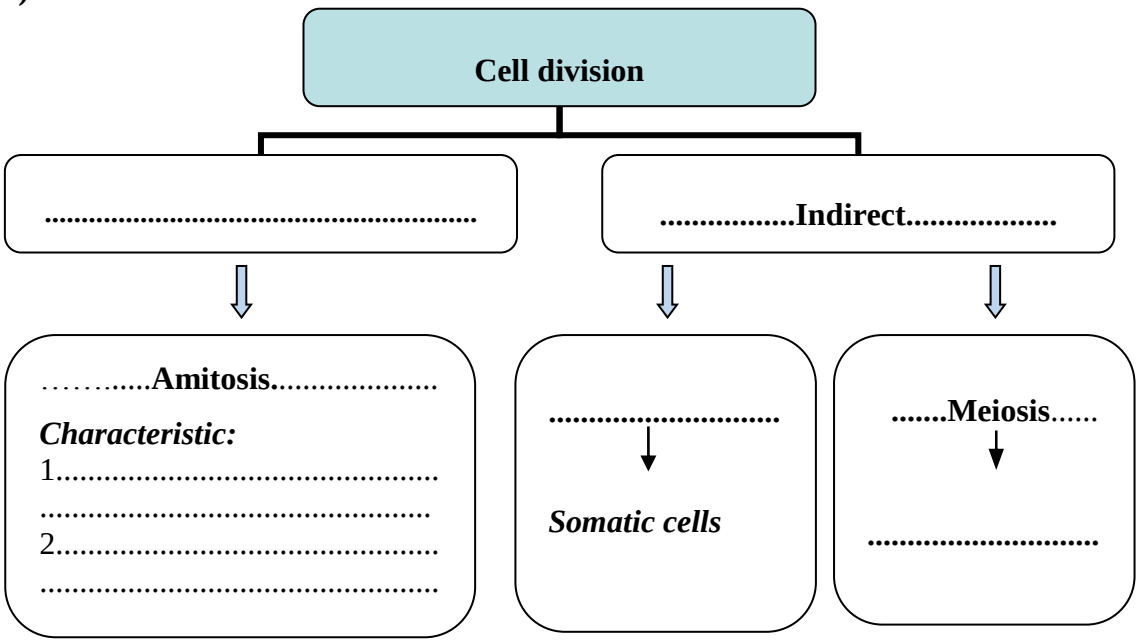
L 0 1 2 3 4 5 6 7 8 9

L 0 1 2 3 4 5 6 7 8 9

9.	**a)** Adrenaline and noradrenaline play an important role in the functioning of the heart. **Name** the endocrine gland that secretes adrenaline and noradrenaline. _____ **b) Fill in** the blank spaces in the picture with the phases/stages of the cardiac cycle (*mechanical activity of the heart*).  **c) Explain** the role of heart valves in the blood circulation _____ _____ _____ **d) Name** a function for each of the formed elements of the blood: ***Erythrocyte-*** _____ ***Thrombocyte-*** _____	L 0 1 2 3 4 5 6 7	L 0 1 2 3 4 5 6 7
10.	Hepatitis - is an inflammatory disease.  **a) Name** the organ for which this disease is characteristic: _____ **b) Name** the pathogen that causes the mentioned pathology: _____ **c) Write** two risk factors that predispose to chronic hepatitis. 1._____ _____ 2._____ _____ **d) Suggest** two methods of prophylaxis against this disease. 1._____ 2._____	L 0 1 2 3 4 5 6	L 0 1 2 3 4 5 6

Basis of genetics and organism improvement/genetic engineering			
11.	**Write** the essence of the definitions for the following biological terms: ***Variability*** **-**_____ _____ _____ ***Replication*****-**_____ _____ _____	L 0 1 2 3 4	L 0 1 2 3 4
12.	**Solve the problem:** A colorblind man with straight hair, married a woman with wavy hair and normal eyesight (*diheterozygous*). It is known that color blindness and straight hair are recessive traits. Color blindness is a trait linked with the X chromosome, while the hair shape is an autosomal trait. **Determine** the probability of having a colorblind daughter with straight-haired in this family (*taking into consideration the total number of children).*	L 0 1 2 3 4 5 6 7 8 9 10 11	L 0 1 2 3 4 5 6 7 8 9 10 11

13. **a) Fill in** the schema below.



b) Write down the stage of ***meiosis*** in which the *crossing*-over takes place.

_____

c**) Name** the stage of ***mitosis*** in which chromosome despiralisation occurs.

_____

d) Indicate the number of chromosomes that daughter cells will have after ***meiosis***, when the mother cell has 46 chromosomes. _____

e) Indicate the number of chromosomes that daughter cells will have after ***mitosis***, when the mother cell has 46 chromosomes._____

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

Ecology and environmental protection

14. **I. Write** in the provided space the definition for the following biological term:

Biosphere -_____

_____

II. The image below represents a natural ecosystem - **the linden tree**.

a) Name two elements of the biocenosis of this ecosystem.

1._____

2._____

b) Characterize the ecosystem represented in the image, according to the following criteria:

Size _____

Living environment _____

Self-regulating ability _____

c) Write the trophic function of the organisms that live in this ecosystem, according to the given example.

Example: Hoopoe - secondary consumer.

Linden

Butterfly -_____

Bee -_____

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