

BIOLOGY ENTRANCE EXAM – 01

I. Answer the following questions and mark the correct answers with an (X) in the table below.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)															
b)															
c)															
d)															

1. Phages are parasitic viruses in:

- a) plants
- b) bacteria
- c) fungi
- d) animals

2. The highest arterial blood pressure is registered in:

- a) pulmonary arteries
- b) the aorta
- c) the upper vena cava
- d) the lower vena cava

3. Trypsin degrades:

- a) fats to fatty acids and glycerol
- b) carbohydrates to glucose
- c) proteins to amino acids
- d) proteins to nucleotides

4. The prostate is:

- a) a muscle
- b) a gland
- c) producing oocytes
- d) producing ATP

5. Vocal cords are located in the:

- a) pharynx
- b) trachea
- c) bronchi
- d) larynx

6. The systemic circulation starts from the:

- a) right ventricle
- b) left ventricle
- c) left atrium
- d) right atrium

7. The basic structural and functional unit of the kidney is:

- a) urethra
- b) nephron
- c) bile
- d) urinary bladder

8. Polypeptide chains are:

- a) linear and branched
- b) circular
- c) linear and unbranched
- d) circular and unbranched

9. Nitrogen bases in DNA are:

- a) adenine, guanine, cytosine, uracil
- b) adenine, thymine, uracil, guanine
- c) adenine, guanine, cytosine, thymine
- d) guanine, uracil, cytosine, thymine

10. The cell nucleus:

- a) is the smallest organelle
- b) contains DNA
- c) contains lysosomes
- d) is a nonmembraneous organelle

11. Albinism is a defect in the synthesis of:

- a) hemoglobin
- b) melanin
- c) keratin
- d) fibrin

12. Mammals excrete sperm cells only during the process of:

- a) fertilization
- b) erection
- c) spermatogenesis
- d) ejaculation

13. During meiosis the number of chromosomes is:

- a) reduced
- b) duplicated
- c) fused
- d) degraded

14. Double membrane organelles are:

- a) plastids
- b) flagella
- c) peroxisomes
- d) mitotic spindles

15. Replication is the synthesis of:

- a) glycogen
- b) DNA
- c) proteins
- d) ribosomes

II. Which of the following statements are correct? Mark them with an (X) in the table below.

(max. 5 points)

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

1. The tympanic cavity is connected to the throat via the Eustachian tube.
2. Accommodation is a process of adaptation of the eye to color perception.
3. The pancreas is a gland with both external and internal secretion.
4. The epidermis is rich in blood vessels.
5. The nephron participates in filtration, reabsorption and secretion.
6. Amylase is a stomach enzyme that degrades proteins.
7. The basic muscles participating in respiration are the intercostal muscles and the diaphragm.
8. Blood transfusion could be performed with any blood type available.
9. Phagocytosis is the transport of droplets inside the cell.
10. Proteins are dissolved in alcohol to form colloidal solutions.
11. Peroxisomes and ribosomes are DNA containing organelles.
12. The nucleus is divided from the cytoplasm via a double membrane.

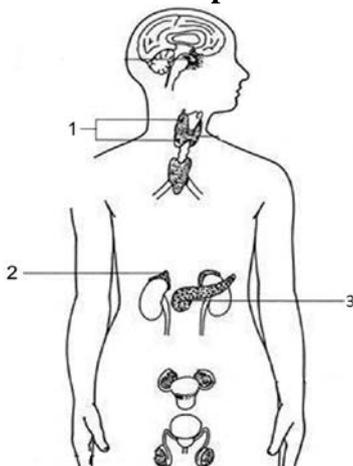
III. Give a short definition for the following terms:

(max. 8 points)

1. Hemoglobin.....
.....
2. Viroid.....
.....
3. Fertilization.....
.....
4. Larynx
.....

IV. A. Label the parts on the figure.

(max. 4 points)



1.
2.
3.

B. What type of organs (regarding their function) are the ones presented?

.....

V. Fill in the table:*(max. 8 points)*

	Prokaryotic cell	Eukaryotic cell
Nucleus		
Genetic material - description		
Examples		

VI. Read the text and answer the questions.*(max. 10 points)*

The vertebral column consists of 26 vertebrae. It is divided into cervical, thoracic, shoulder and sacral regions. A vertebra has a body, an arc and processes. A joint is formed between the body and the arc. The first and the last vertebrae differ in structure and type of joining.

1. There are 4 false words in the text. Write them in the table and provide their true counterparts.

False	True
1.	1.
2.	2.
3.	3.
4.	4.

2. What is the name of the first vertebra?

3. The sternum (breastbone) is a part of which structure?

VII. Describe and explain:*(max. 20 points)*

1. The urinary bladder – structure and function
2. Lysosomes – structure and function

BIOLOGY ENTRANCE EXAM – 01

I. One point is given for each correct answer.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)													X	X	
b)	X	X		X		X	X			X	X				X
c)			X					X	X						
d)					X							X			

II. One point is given for each correct answer.

(max. 5 points)

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

III. Two points are given for each correct answer.

(max. 8 points)

IV. One point is given for each correct answer.

(max. 4 points)

1. thyroid gland
 2. suprarenal glands
 3. pancreatic gland
- B. Glands/glandular organs

V. One to two points are given for each correct answer.

(max. 8 points)

	Prokaryotic cell	Eukaryotic cell
Nucleus	Missing	Has a nucleus
Genetic material - description	Nucleoid – large circular DNA molecule and small circular DNA molecules – plasmids	Nucleus with double membrane containing a complex of DNA and proteins – chromatin
Examples	Bacteria	Plant and animal cells

VI. One point is given for each correct answer.

(max. 10 points)

False	True
1. 26 vertebrae	1. 24 vertebrae
2. shoulder	2. lumbar
3. joint	3. opening
4. last	4. second

2. What is the name of the first vertebra? ATLAS
3. The sternum (breastbone) is part of which structure? RIB CAGE

VII. Describe and explain:

(max. 20 points)

1. The urinary bladder – structure and function
2. Lysosomes – structure and function

BIOLOGY ENTRANCE EXAM – 02

I. Answer the following questions and mark the correct answers with an (X) in the table below.
(max.15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)															
b)															
c)															
d)															

1. Kidneys are surrounded by:

- a) connective tissue
- b) adipose tissue
- c) muscular tissue
- d) epithelial tissue

2. Which nitrogen base is not found in DNA?

- a) guanine
- b) thymine
- c) uracil
- d) cytosine

3. The midbrain is involved in:

- a) vision and hearing
- b) cardiovascular activity
- c) sense of smell and taste
- d) breathing

4. Prions are:

- a) eukaryotic cells
- b) infectious particles
- c) lipids
- d) bacteria

5. The final urine does not contain:

- a) water and salts
- b) uric acid
- c) urea and uric acid
- d) amino acids and glucose

6. RNA is:

- a) double stranded
- b) found in the nucleus
- c) found in mitochondria
- d) single stranded

7. Which cells have the largest nucleus?

- a) phagocytes
- b) leukocytes
- c) monocytes
- d) erythrocytes

8. The peptide bond is:

- a) covalent
- b) hydrogen
- c) ionic
- d) van der Waals

9. Progesterone is secreted from the:

- a) mature follicles
- b) corpus luteum
- c) pituitary gland
- d) exocrine glands

10. Polar bodies are formed in the course of:

- a) sporulation
- b) spermatogenesis
- c) oogenesis
- d) implantation

11. Pepsin is produced by the:

- a) pancreas
- b) liver
- c) adrenal gland
- d) stomach mucosa

12. The vein, which enters the liver, is called:

- a) liver vein
- b) portal vein
- c) inferior vena cava
- d) upper vena cava

13. Duplication is:

- a) an intrachromosomal aberration
- b) an interchromosomal aberration
- c) a type of polyploidy
- d) a type of aneuploidy

14. The true organ of hearing is the:

- a) stirrup
- b) Eustachian tube
- c) organ of Corti
- d) cochlea

15. The polysome is a complex of ribosomes and:

- a) tRNA
- b) mRNA
- c) DNA
- d) lipids

II. Which of the following statements are correct? Mark them with an (X) in the table below.

(max. 5 points)

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

1. The bile activates the enzyme amylase which breaks down carbohydrates
2. The second heart sound is systolic.
3. The first cervical vertebra is called atlas and connects the spine to the skull.
4. The sclera of the eyeball has a feeding function.
5. The sweat glands are situated within the muscular tissue.
6. The epiphysis secretes the hormone melatonin.
7. The ribs are flat bones.
8. Amino acids are connected in polynucleotide chains.
9. Red blood cells perform phagocytosis.
10. Translation takes place in ribosomes.
11. Insulin is produced by the suprarenal glands.
12. The most characteristic feature of prokaryotic cells is the lack of nucleus.

III. Give a short definition for the following terms:

(max. 8 points)

Ureter

.....

Virion.....

.....

RNA.....

.....

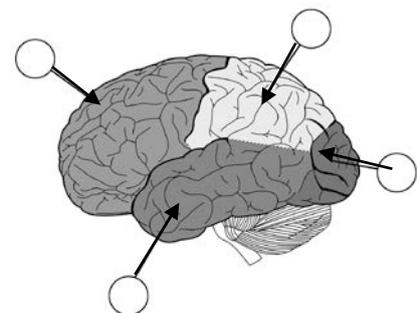
Meiosis.....

.....

IV. Label the parts of the brain.

(max. 4 points)

1. Parietal lobe
2. Temporal lobe
3. Occipital lobe
4. Frontal lobe



V. Fill in the table:

(max. 8 points)

	Transcription	Translation
Template		
Building blocks		
Main enzyme		
End product		

VI. Read the text and answer the questions.

(max. 10 points)

Disease agents consisting of only “naked” RNA are known as viruses. They contain double stranded RNA molecules. They invade animal cells only. Prions are infectious particles that contain only DNA molecules.

1. There are 4 false words in the text. Write them in the table and provide their true counterparts.

False	True
1.	1.
2.	2.
3.	3.
4.	4.

2. What type of cells are mostly invaded by prions?
3. Which virus affects human T helper lymphocytes?

VII. Describe and explain:

(max. 20 points)

1. The thyroid gland – structure and function
2. Common (universal) membrane-bound organelles – structure, types

BIOLOGY ENTRANCE EXAM – 02

I. One point is given for each correct answer.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)			X					X					X		
b)	X			X					X			X			X
c)		X					X			X				X	
d)					X	X					X				

II. One point is given for each correct answer.

(max. 5 points)

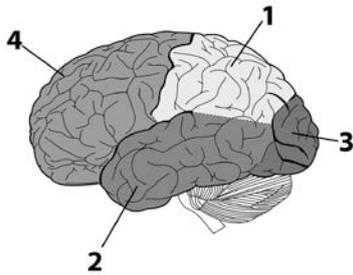
1	2	3	4	5	6	7	8	9	10	11	12
		X			X	X			X		X

III. Two points are given for each correct answer.

(max. 8 points)

IV. One point is given for each correct answer.

(max. 4 points)



V. One point is given for each correct answer.

(max. 8 points)

	Transcription	Translation
Template	DNA	mRNA
Building blocks	ribonucleotides	amino acids
Main enzyme	RNA polymerase	Peptidyl-transferase
End product	RNA	protein

VI. One point is given for each correct answer.

(max. 10 points)

1.

False	True
1. viruses	1. viroids
2. double stranded	2. single stranded
3. animal	3. plant
4. DNA	4. protein

2. What type of cells are mostly invaded by prions? BRAIN CELLS

3. Which virus affects human T helper lymphocytes? HIV

VII. Describe and explain:

(max. 20 points)

1. The thyroid gland – structure and functions

2. Common (universal) membrane-bound organelles

BIOLOGY ENTRANCE EXAM – 03

I. Answer the following questions and mark the correct answers with an (X) in the table below. *(max. 15 points)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)															
b)															
c)															
d)															

1. The eye lens is:

- a) transparent and fluid
- b) is double convex
- c) is double concave
- d) nontransparent and fluid

2. The red blood cells are called:

- a) thrombocytes
- b) erythrocytes
- c) phagocytes
- d) leukocytes

3. The epidermis is:

- a) the outer skin layer
- b) rich in glandular tissue
- c) highly vascularized
- d) is composed of dead cells only

4. The excretory organ is the:

- a) kidney
- b) nephron
- c) Malpighian body
- d) pelvis

5. The myocardial contraction is known as:

- a) systole
- b) diastole
- c) pause
- d) pulse

6. Which of the following is a facial bone?

- a) frontal bone
- b) ethmoid bone
- c) mandible
- d) occipital bone

7. The triceps of the lower limb:

- a) flexes the ankle
- b) flexes the elbow
- c) extends the elbow
- d) extends the hip

8. The duodenum is the:

- a) initial part of the large intestine
- b) final part of the large intestine
- c) final part of the small intestine
- d) initial part of the small intestine

9. Ribosomes:

- a) participate in protein synthesis
- b) are single membrane organelles
- c) participate in lipid synthesis
- d) are double membrane organelles

10. The main function of the Golgi complex is:

- a) protein synthesis
- b) lipid synthesis
- c) formation of lysosomes
- d) formation of ribosomes

11. The chromatin is a:

- a) complex of proteins
- b) bacterial chromosome
- c) complex of proteins and DNA
- d) structure in prokaryotic cells

12. Meiosis is typical of:

- a) liver cells
- b) somatic cells
- c) germ cells
- d) blood cells

13. During metaphase chromosomes:

- a) are aligned along the equator of the cell
- b) are decondensed
- c) move to opposite poles of the cell
- d) are composed of one chromatid

14. The bonds between amino acids residues in the polypeptide chain are:

- a) peptide
- b) phosphodiester
- c) hydrogen
- d) glycosylic

15. Transcription is a process of:

- a) DNA synthesis
- b) protein synthesis
- c) cell division
- d) RNA synthesis

II. Which of the following statements are correct? Mark them with an (X) in the table below. (max. 5 points)

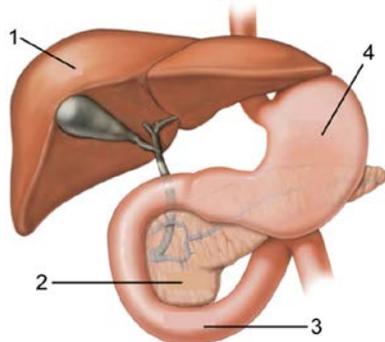
1	2	3	4	5	6	7	8	9	10	11	12

1. Amino acids recognize directly their corresponding codons on mRNA.
2. The human body is built by three basic tissue types.
3. The viral capsid is a protein structure.
4. Cell nucleus could function independently of the cytoplasm.
5. The hypofunction of the pancreas results in diabetes mellitus.
6. Prions are multicellular organisms causing mad cow disease.
7. Proteins are produced in lysosomes.
8. Bones are the active part of the locomotive system.
9. The pupil is situated in the central part of the iris.
10. The pituitary gland is located in the cavity of the skull.
11. The rib cage belongs to the bones of the trunk
12. Melanin is produced by the kidney.

III. Give a short definition for the following terms: (max. 8 points)

1. Mitosis.....
.....
2. Systemic circulation.....
.....
3. Menstruation.....
.....
4. Sensory nerves
.....

IV. Label the figure. (max. 4 points)



1.
2.
3.
4.

V. Fill in the table:*(max. 8 points)*

	DNA	RNA
Pentose		
Nitrogen bases		
Cellular localization		
Structure		

VI. Read the text and answer the questions.*(max. 10 points)*

Arteries are blood vessels that carry blood to the heart. They have small diameter and elastic walls. They branch into narrower vessels called venules which branch further to capillaries. The blood is pumped out of the heart under pressure into the aorta and the cardiac artery.

1. There are 4 false words in the text. Write them in the table and provide their true counterparts.

False	True
1.	1.
2.	2.
3.	3.
4.	4.

2. From which blood vessel does the systemic circulation start?

3. What is the term for the cardiac relaxation?

VII. Describe and explain:*(max. 20 points)*

1. Sweat glands – structure and function
2. Types of RNA – structure and functions

BIOLOGY ENTRANCE EXAM – 03

I. One point is given for each correct answer.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)			X	X	X		X		X				X	X	
b)	X	X													
c)						X				X	X	X			
d)								X							X

II. One point is given for each correct answer.

(max. 5 points)

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

III. Two points are given for each correct answer.

(max. 8 points)

IV. One point is given for each correct answer.

(max. 4 points)

1. liver
2. pancreas
3. duodenum
4. stomach

V. One point is given for each correct answer.

(max. 8 points)

	DNA	RNA
Pentose	deoxyribose	ribose
Nitrogen bases	A, G, C, T	A, G, C, U
Cellular localization	In the nucleus /mitochondria, plastids	In the cytoplasm
Structure	double stranded	single stranded

VI. One point is given for each correct answer.

(max. 10 points)

False	True
1. to the heart	1. out of the heart
2. small	2. large
3. venules	3. arterioles
4. cardiac	4. pulmonary

2. From which blood vessel does the systemic circulation start? AORTA
3. What is the term for the cardiac relaxation? DIASTOLE

VII. Describe and explain:

(max. 20 points)

1. Sweat glands – structure and function
2. Types of RNA – structure and functions

BIOLOGY ENTRANCE EXAM – 04

I. Answer the following questions and mark the correct answers with an (X) in the table below. *(max. 15 points)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)															
b)															
c)															
d)															

1. The ear ossicles are located in the:

- a) middle ear
- b) external ear
- c) inner ear
- d) anterior ear

2. The ovaries produce:

- a) testosterone
- b) cortisone
- c) progesterone
- d) growth hormone

3. The upper epidermal layer consists of:

- a) live nucleated cells
- b) dead nucleated cells
- c) live non nucleated cells
- d) dead non nucleated cells

4. A person from blood group AB has:

- a) A antigens
- b) A and B antigens
- c) B antigens
- d) no antigens

5. The temporal bones are part of the:

- a) rib cage
- b) trunk
- c) limbs
- d) cranium

6. The sphincter is a:

- a) muscle
- b) bone
- c) ligament
- d) gland

7. Hormones are secreted in the:

- a) blood
- b) muscles
- c) saliva
- d) sweat

8. The floating ribs are:

- a) pairs 8, 9 and 10
- b) the first two pairs
- c) pairs 7, 8 and 9
- d) the last two pairs

9. Which events take place in prophase?

- a) the nuclear volume decreases
- b) the chromatin is coiled into chromosomes
- c) chromosomes are situated in cell poles
- d) chromosomes are paired

10. Translation is a process of:

- a) DNA synthesis
- b) RNA synthesis
- c) protein synthesis
- d) nucleotide synthesis

11. No nucleus is present in:

- a) neutrophils
- b) eosinophils
- c) erythrocytes
- d) leukocytes

12. Starch is a food reserve in the cells of:

- a) plants
- b) animals
- c) bacteria
- d) fungi

13. The intracellular digestion is performed by:

- a) peroxisomes
- b) plastids
- c) mitochondria
- d) lysosomes

14. The extracellular form of the virus is known as:

- a) viroid
- b) prion
- c) virion
- d) capsid

15. Duplication is:

- a) an intrachromosomal aberration
- b) a type of polyploidy
- c) an interchromosomal aberration
- d) a type of aneuploidy

II. Which of the following statements are correct? Mark them with an (X) in the table below. (max. 5 points)

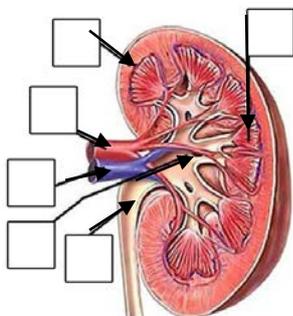
1	2	3	4	5	6	7	8	9	10	11	12

1. Amino acids recognize their corresponding codons on mRNA via tRNAs.
2. The bones of the trunk make up the vertebral column and the rib cage.
3. The viral capsid is a lipid structure.
4. Ribosomes are situated in the nucleus.
5. The iris is situated behind the sclera and contains pigments.
6. The codon is a triplet located within a molecule of tRNA.
7. The vestibular system is responsible for the body temperature.
8. Muscles are the active part of the locomotive system.
9. The central nervous system includes the spinal cord and the pituitary gland.
10. The suprarenal glands are located in the cavity of the skull.
11. The systemic circulation starts with the capillaries.
12. The Malpighian bodies are situated in the kidney.

III. Give a short definition for the following terms: (max. 8 points)

1. Phagocytosis.....
.....
2. Peripheral nervous system
.....
3. Gametogenesis.....
.....
4. DNA.....
.....

IV. Label the figure with the corresponding (max. 6 points)



1. pyramid
2. artery
3. cortex
4. vein
5. pelvis
6. ureter

V. Fill in the table:*(max. 6 points)*

	Interphase	Metaphase
Mitotic spindle		
Appearance (structure) of chromosomes		
Cellular localization of chromosomes		

VI. Read the text and answer the questions.*(max. 10 points)*

These bacteria have a lot of membrane lamellae – thylakoids. They contain the pigment chlorophyll which helps the cell to emit light and to obtain inorganic substances. They are most widely spread in soil and in polluted air. They use electric energy for their vital processes.

1. There are 4 false words in the text. Write them in the table and provide their true counterparts.

False	True
1.	1.
2.	2.
3.	3.
4.	4.

2. Which are these bacteria ?.....

3. What process do they perform?

VII. Describe and explain:*(max. 20 points)*

1. Thrombocytes – structure and function

2. Functions of proteins

BIOLOGY ENTRANCE EXAM – 04

I. One point is given for each correct answer.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)	X					X	X					X			X
b)				X					X						
c)		X								X	X			X	
d)			X		X			X					X		

II. One point is given for each correct answer.

(max. 5 points)

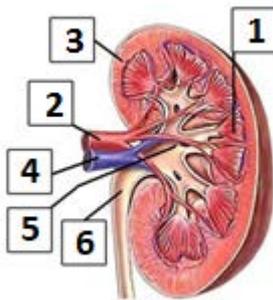
1	2	3	4	5	6	7	8	9	10	11	12
X	X			X			X				X

III. Two points are given for each correct answer.

(max. 8 points)

IV. One point is given for each correct answer.

(max. 6 points)



V. One point is given for each correct answer.

(max. 6 points)

	Interphase	Metaphase
Mitotic spindle	Not present	Present
Appearance (structure) of chromosomes	Decondensed and uncoiled	Highly condensed and supercoiled
Cellular localization of chromosomes	Irregularly scattered	Aligned in the equator of the spindle

VI. Read the text and answer the questions.*(max. 10 points)*

False	True
1. emit	1. absorb
2. inorganic	2. organic
3. air	3. water
4. electric	4. solar

2. Which are these bacteria? CYANOBACTERIA
3. What process do they perform? PHOTOSYNTHESIS

VII. Describe and explain:*(max. 20 points)*

1. Thrombocytes – structure and function
2. Functions of proteins

BIOLOGY ENTRANCE EXAM – 05

I. Answer the following questions and mark the correct answers with an (X) in the table below. *(max. 15 points)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)															
b)															
c)															
d)															

1. The retina contains:

- a) pigments
- b) sclera
- c) photoreceptors
- d) hormones

2. The trachea is built up of:

- a) smooth muscles
- b) ring vessels
- c) cartilage semirings
- d) cartilage rings

3. Insulin is produced by the:

- a) thyroid gland
- b) suprarenal gland
- c) liver
- d) pancreas

4. The cardiac contraction is known as:

- a) pulse
- b) systole
- c) diastole
- d) pause

5. The parietal bones are part of the:

- a) limbs
- b) trunk
- c) sternum
- d) cranium

6. What is produced during replication?

- a) DNA
- b) tRNA
- c) mRNA
- d) protein

7. Phages are:

- a) viruses
- b) bacteria
- c) prions
- d) plants

8. Secretions are produced by:

- a) smooth muscles
- b) connective tissue
- c) surface epithelium
- d) glandular epithelium

9. The monomers of proteins are:

- a) amino acids
- b) nucleotides
- c) nitrogen bases
- d) monosaccharides

10. The main function of the Golgi complex is:

- a) protein synthesis
- b) lipid synthesis
- c) formation of lysosomes
- d) formation of ribosomes

11. Globular proteins:

- a) are soluble in water
- b) result from primary structure
- c) result from tertiary structure
- d) are positively charged

12. Bacteria are:

- a) organelles
- b) prokaryotic cells
- c) eukaryotic cells
- d) circular chromosomes

13. A person with blood group A has on his erythrocytes:

- a) antigens A and B
- b) antigen B
- c) no antigens
- d) antigen A

14. The vein, which enters the liver is called:

- a) liver vein
- b) inferior vena cava
- c) portal vein
- d) upper vena cava

15. During metaphase chromosomes:

- a) move to opposite poles of the cell
- b) are decondensed
- c) are aligned along the equator of the cell
- d) are composed of one chromatid

II. Which of the following statements are correct? Mark them with an (X) in the table below. (max. 5 points)

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

1. Chromatin is composed of amino acids and chloroplasts.
2. Adrenalin is produced by the suprarenal glands.
3. The bacterial wall is a lipid structure.
4. Mitochondria and plastids contain DNA.
5. The sclera is a pigmented layer of the eye ball.
6. The skeletal muscles have a body and a tendon.
7. Proteins are produced as a result of transcription.
8. Cilia and flagella are built up of microtubules.
9. The gene is a portion of DNA responsible for the synthesis of either an RNA or a protein molecule.
10. Hairs and nails are structures of the connective tissue.
11. The interphase is characterized by coiling of chromatin fibers.
12. tRNA transports ribosomes to the nucleus.

III. Give a short definition for the following terms: (max. 8 points)

1. Translation.....
.....
2. Codon.....
.....
3. Chromosome.....
.....
4. Denaturation.....
.....

IV. Fill in the table: (max. 6 points)

	Mitosis	Meiosis
Is typical of which cells?		
Genetic characteristics of the new cells		
Duration, number of phases		

V. A. Label the figure. Which joints and bones are shown?

(max. 6 points)



- 1.....
- 2.....
- 3.....
- 4.....

B. What types of bones depending on their structure are presented on the figure?

- 5.....
- 6.....

VI. Read the text and answer the questions.

(max. 10 points)

Sex glands produce gametes and sex enzymes. The male reproductive organs include sperm ducts, seminal vacuoles and the prostate gland. The female organs are oval glands, uterus and vagina. The process of fertilization of the egg and sperm takes place in the uterus.

1. There are 4 false words in the text. Write them in the table and provide their true counterparts.

False	True
1.	1.
2.	2.
3.	3.
4.	4.

2. Which process ends with the release of the mature egg?.....

3. Which process occurs if the egg is not fertilized?

VII. Describe and explain:

(max. 20 points)

- 1. The epidermis and dermis – structure and function
- 2. Secondary structure of proteins

BIOLOGY ENTRANCE EXAM – 05

I. One point is given for each correct answer.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)						X	X		X						
b)				X								X			
c)	X	X								X	X			X	X
d)			X		X			X					X		

II. One point is given for each correct

(max. 5 points)

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

III. Two points are given for each correct answer.

(max. 8 points)

IV. One point is given for each correct answer.

(max. 6 points)

	Mitosis	Meiosis
Is typical of which cells?	Somatic cells	Germ cells
Genetic characteristics of the new cells	Identical to the parental cells	Different from the parental cells
Duration, number of phases	Shorter, 4 phases	Longer, 2 subsequent mitotic divisions

V. One point is given for each correct answer.

(max. 6 points)

A.

1. Shoulder joint
2. Elbow joint
3. Wrist joint
4. Scapula/Shoulder blade

B.

5. Flat bones
6. Long/short bones

VI. Read the text and answer the questions.

(max. 10 points)

False	True
1. enzymes	1. hormones
2. vacuoles	2. vesicles
3. oval	3. ovarian
4. uterus	4. oviducts

2. Which process ends with the release of the mature egg? OVULATION

3. Which process occurs if the egg is not fertilized? MENSTRUATION

VII. Describe and explain:

(max. 20 points)

1. The epidermis and dermis – structure and function

2. Secondary structure of proteins

BIOLOGY ENTRANCE EXAM – 06

I. Answer the following questions and mark the correct answers with an (X) in the table below.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)															
b)															
c)															
d)															

1. The plasmid is:

- a) infectious particle
- b) cytoplasmic organelle
- c) nuclear part
- d) circular DNA molecule

2. The flow of genetic information runs in the following direction:

- a) DNA – RNA - Protein
- b) RNA – Protein - DNA
- c) Protein – RNA - DNA
- d) RNA – DNA - Protein

3. At the end of the first meiotic division each chromosome consists of:

- a) two chromatids
- b) one DNA molecule
- c) four chromatids
- d) four DNA molecules

4. Urine production takes place in the:

- a) urinary bladder
- b) nephron
- c) ureter
- d) urethra

5. Energy is provided in the cell by:

- a) anabolic processes
- b) catabolic processes
- c) carboxylation
- d) translation

6. Mineralocorticoids are produced in the:

- a) cortex of the pituitary gland
- b) medulla of the thymus
- c) cortex of the pancreas
- d) cortex of suprarenal glands

7. Ribosomes are found in:

- a) smooth endoplasmic reticulum
- b) endosomes
- c) rough endoplasmic reticulum
- d) exosomes

8. The zygote is:

- a) a diploid cell
- b) a haploid cell
- c) formed in the uterus
- d) formed in the vagina

9. Which function is not typical of proteins?

- a) transport
- b) protective
- c) catalytic
- d) coding

10. Amylase dissociates:

- a) proteins to peptides
- b) starch to glucose
- c) proteins to amino acids
- d) starch to amylose

11. Progesterone is secreted from the:

- a) mature follicles
- b) corpus luteum
- c) pituitary gland
- d) exocrine glands

12. Which is the outermost layer of the heart?

- a) myocardium
- b) pericardium
- c) epicardium
- d) endocardium

13. A person with blood group type B has:

- a) anti-B antibodies
- b) B antigens
- c) A and B antigens
- d) no antibodies

14. Double membrane organelles are:

- a) plastids
- b) flagella
- c) peroxisomes
- d) mitotic spindles

15. The cell membrane is built up of:

- a) lipids and carbohydrates
- b) proteins and salts
- c) proteins and carbohydrates
- d) lipids and proteins

II. Which of the following statements are correct? Mark them with an (X) in the table below.

(max. 5 points)

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

1. Fibrinogen plays a major role in blood clotting.
2. Lipids are dissolved in organic solutions.
3. There are 14 pairs of ribs in the human body.
4. Smooth muscle cells are oval in shape.
5. The nephron is part of the digestive system.
6. The acrosome contains enzymes facilitating fertilization.
7. Bacteria are eukaryotic cells.
8. Hairs and nails are connective tissue structures.
9. Phagocytosis is the transport of particles outside the cell.
10. Chromatin condensation starts in the prophase of cell division.
11. Bones may be long, short and flat.
12. The pleura covers the outer side of the lungs.

III. Give a short definition for the following terms:

(max. 8 points)

1. Pulse

.....

2. Ovulation.....

.....

3. Alveolus.....

.....

4. Chromatin.....

.....

IV. Fill in the table:

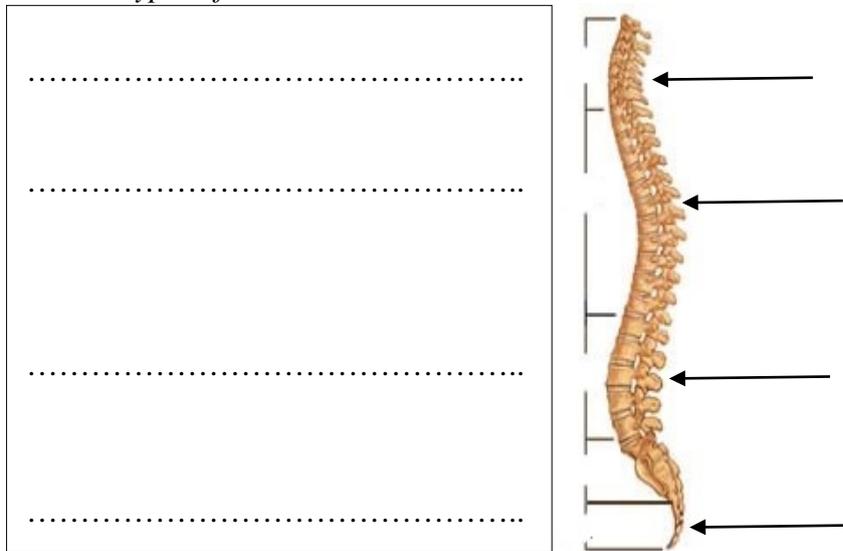
(max. 8 points)

	Translation	Transcription
Template		
Building blocks		
Main enzyme		
End product		

V. Label the parts on the figure.

(max. 4 points)

Label the types of vertebrae shown



VI. Read the text and answer the questions.

(max. 10 points)

The digestive system in humans is closed. Its major organs are the oral cavity, the pharynx, the stomach and the intestines. The saliva causes the mechanical digestion of food. The tongue is an epithelial organ that moves voluntarily. It forms and moves the bolus and participates in speaking. The tasting of food is due to receptors in the oesophagus.

1. There are 4 false words in the text. Write them in the table and provide their true counterparts.

False	True
1.	1.
2.	2.
3.	3.
4.	4.

2. Which are the most important organs for mechanical digestion of the food?

3. Which process moves the food down along the intestines?

VII. Describe and explain:

(max. 20 points)

1. Pancreatic gland – structure and function
2. Structure of viruses

BIOLOGY ENTRANCE EXAM – 06

I. One point is given for each correct answer.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)		X	X					X						X	
b)				X	X					X	X		X		
c)							X					X			
d)	X					X			X						X

II. One point is given for each correct answer.

(max. 5 points)

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

III. Two points are given for each correct answer.

(max. 8 points)

IV. One point is given for each correct answer.

(max. 8 points)

	Translation	Transcription
Template	mRNA	DNA
Building blocks	Amino acids	Ribonucleotides
Main enzyme	Peptidyl transferase	RNA polymerase
End product	Protein	RNA

V. One point is given for each correct answer.

(max. 4 points)

- cervical
- thoracic
- lumbar
- coccyx

VI. Read the text and answer the questions. ...

(max. 10 points)

False	True
1. closed	1. open
2. mechanical	2. chemical
3. epithelial	3. muscular
4. oesophagus	4. tongue

- 2. Which are the most important organs for mechanical digestion of the food? **TEETH**
- 3. Which process moves the food down along the intestines? **PERISTALSIS**

VII. Describe and explain:

(max. 20 points)

- 1. Pancreatic gland – structure and function
- 2. Structure of viruses

BIOLOGY ENTRANCE EXAM – 07

I. Answer the following questions and mark the correct answers with an (X) in the table below. (max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)															
b)															
c)															
d)															

1. The striated muscle tissue forms:

- a) the brain
- b) the skeletal muscles
- c) the heart wall
- d) the bladder

2. Blood is a type of:

- a) epithelial tissue
- b) muscle tissue
- c) connective tissue
- d) nervous tissue

3. The last part of the large intestine is called:

- a) rectum
- b) duodenum
- c) ventricle
- d) appendix

4. The basic structural and functional unit of the kidney is:

- a) urethra
- b) bile
- c) urinary bladder
- d) nephron

5. The hormone produced by the testes is:

- a) testosterone
- b) oestrogen
- c) thyroxin
- d) oxytocin

6. The *substantia nigra* is located in the:

- a) pons
- b) cerebellum
- c) mesencephalon
- d) diencephalon

7. The photoreceptors responsible for white and dark vision are:

- a) rods
- b) cones
- c) iris
- d) sclera

8. The organ of Corti is situated in the:

- a) middle ear

b) cochlea

c) Eustachian tube

d) external ear

9. The process of RNA synthesis is:

- a) replication
- b) translation
- c) transcription
- d) duplication

10. Crossing-over is performed during:

- a) anaphase I
- b) telophase I
- c) metaphase I
- d) prophase I

11. The centriole participates in:

- a) transcription
- b) cell division
- c) cell differentiation
- d) translation

12. Non-membrane organelles are:

- a) ribosomes
- b) vacuoles
- c) mitochondria
- d) chloroplasts

13. Prions are:

- a) infectious particles
- b) eukaryotic cells
- c) lipids
- d) bacteria

14. Antigens are:

- a) foreign molecules
- b) immune cells
- c) phagocytes
- d) body fluids

15. The polysome is a complex of ribosomes and:

- a) tRNA
- b) DNA
- c) mRNA
- d) lipids

II. Which of the following statements are correct? Mark them with an (X) in the table below. *(max. 5 points)*

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

1. The skeletal muscles have a body and tendons.
2. Bones are light, solid and fragile.
3. Neurons transmit information, initiated by different stimuli.
4. There are no antibodies against the Rh factor in human blood plasma.
5. The cerebellum is situated above the occipital parts of the cerebrum.
6. Efferent nerve bundles transmit nerve impulses from the brain to the skeletal muscles.
7. The viral particle, when out of the cell, is called prion.
8. A major role in secretion is played by the centrioles.
9. The chromatin consists of DNA and proteins.
10. Telophase is followed by anaphase.
11. The cell mechanism that controls the reduction of chromosomes is called mitosis.
12. The process, in which the DNA of the cell is doubled, is called translation.

III. Give a short definition for the following terms:

(max. 8 points)

1. Transcription.....
.....
2. Karyotype.....
.....
3. Homeostasis.....
.....
4. Grey matter.....
.....

IV. Fill in the table:

(max. 8 points)

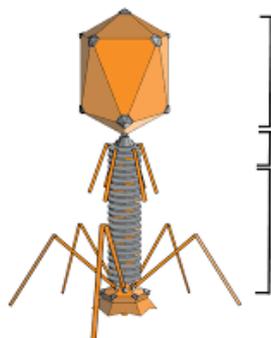
Blood groups	Antigens on erythrocyte membranes	Antibodies in blood plasma
A		
B		
AB		
0		

V. A. Label the parts on the figure and answer the question.

(max. 4 points)

1. tail
2. capsid (head)
3. collar

B. What is presented?.....



VI. Read the text and answer the question.

(max. 10 points)

Proteins are composed of 30 different types of amino acids. Therefore, proteins are heteropolymers. The covalent bond, formed between amino acids, is called phosphodiester bond. Polypeptide chains are straight and branched. The folding of the polypeptide chain into a uniform spiral or into a beta sheet shape is recognized as the tertiary structure of proteins.

1. There are 4 false words in the text. Write them in the table and provide their true counterparts.

False	True
1.	1.
2.	2.
3.	3.
4.	4.

2. Which structure determines the properties and the biological functions of proteins?

.....

VII. Describe and explain:

(max. 20 points)

1. The sex glands – types, hormones, localization
2. Mitochondria – structure and function

BIOLOGY ENTRANCE EXAM – 07

I. One point is given for each correct answer.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)			X		X		X					X	X	X	
b)	X							X			X				
c)		X				X			X						X
d)				X						X					

II. One point is given for each correct answer.

(max. 5 points)

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

III. Two points are given for each correct answer.

(max. 8 points)

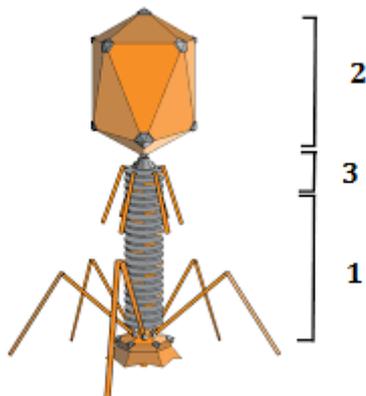
IV. One point is given for each correct answer.

(max. 8 points)

Blood groups	Antigens on erythrocyte membranes	Antibodies in blood plasma
A	A	β
B	B	α
AB	AB	-
0	-	α, β

V. One point is given for each correct answer.

(max. 4 points)



B. phage

VI. One point is given for each correct answer and two points for the question.

(max. 10 points)

False	True
1. 30	1. 20
2. phosphodiester	2. peptide
3. branched	3. unbranched
4. tertiary	4. secondary

2. Which structure determines the properties and the biological functions of proteins?

PRIMARY STRUCTURE

VII. Describe and explain:

(max. 20 points)

1. The sex glands – types, hormones, localization
2. Mitochondria – structure and function

BIOLOGY ENTRANCE EXAM – 08

I. Answer the following questions and mark the correct answers with an (X) in the table below. *(max. 15 points)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)															
b)															
c)															
d)															

1. The nervous tissue forms the:

- a) brain and the spinal cord
- b) heart wall
- c) bones
- d) glands

2. A person from blood group O has:

- a) A antigens
- b) B antigens
- c) A and B antigens
- d) no antigens

3. Blood moves in one direction due to the:

- a) trachea
- b) nerve impulses
- c) cardiac valves
- d) arteries

4. The enzyme trypsin breaks down:

- a) lipids
- b) proteins
- c) carbohydrates
- d) nucleic acids

5. Urine filtration happens in the:

- a) urethra
- b) Malpighian body
- c) liver
- d) large intestine

6. The gas exchange takes place in the:

- a) trachea
- b) nasal cavity
- c) alveoli
- d) vocal gap

7. Thyroxin is secreted by the:

- a) pituitary gland
- b) thyroid gland
- c) testes
- d) ovary

8. Translation is the synthesis of:

- a) proteins
- b) DNA
- c) RNA

d) lipids

9. In which phase chromosomes are aligned in the equator?

- a) anaphase
- b) prophase
- c) metaphase
- d) telophase

10. DNA polymerase participates in:

- a) osmosis
- b) replication
- c) translation
- d) diffusion

11. How many chromosomes are there in the human karyotype?

- a) 40
- b) 23
- c) 45
- d) 46

12. Chromatids are connected by a:

- a) centromere
- b) telomere
- c) kinetochore
- d) centriole

13. Lysosomes are involved in:

- a) division
- b) movement
- c) digestion
- d) secretion

14. The portion of DNA responsible for a polypeptide chain is called:

- a) gene
- b) karyotype
- c) chromatin
- d) virion

15. Amino acids are bound by:

- a) non-covalent bond
- b) peptide bonds
- c) phosphodiester
- d) N-glycosidic bond

II. Which of the following statements are correct? Mark them with an (X) in the table below. *(max. 5 points)*

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

1. The sensory organ is made up of various receptor neurons.
2. The white matter consists of the neuron bodies.
3. There are 31 pairs of spinal nerves.
4. Urine production takes place in the ureters.
5. Mineralocorticoids regulate metabolism of mineral salts.
6. The larynx is the upper, wider part of the trachea.
7. Pancreatic juice is produced by the liver.
8. The process of recording DNA in RNA is called translation.
9. The tertiary structure of proteins is presented by the spiral or the beta sheet shape.
10. HIV is an RNA virus.
11. Cell organelles are embedded in a liquid medium called nucleoid.
12. The prostate is a muscle.

III. Give a short definition for the following terms:

(max. 8 points)

1. Ribosome.....
.....
2. Cones.....
.....
3. Replication.....
.....
4. Prion.....
.....

IV. Fill in the table:

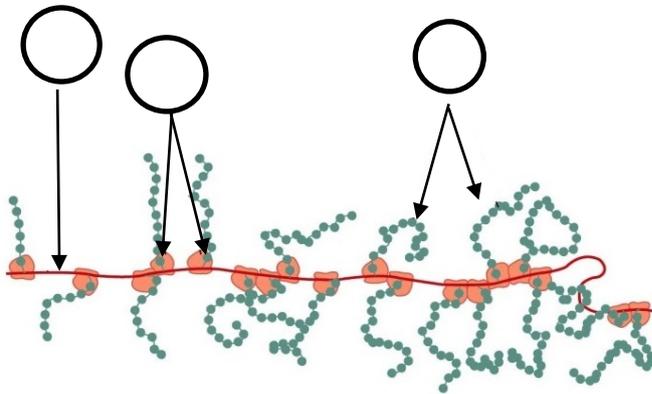
(max. 8 points)

	Nucleic acids	Proteins
Monomers		
Chemical bonds between monomers		
Biological properties		

V. Label the parts on the figure and answer the question.

(max. 4 points)

1. mRNA
2. polypeptides
3. ribosomes



B. What structure is presented?

VI. Read the text and answer the question.

(max. 10 points)

The heart is a muscular organ which pumps blood into the lymphatic vessels. Longitudinally, a wall divides the heart into right and left parts. In each part there is an atrium and a tendon. The heart walls are built up of two layers. The inner layer of the heart wall is made up of a simple squamous epithelium and is called myocardium.

1. There are 4 false words in the text. Write them in the table and provide their true counterparts.

False	True
1.	1.
2.	2.
3.	3.
4.	4.

2. Which is the outermost layer of the heart wall?.....

VII. Describe and explain:

(max. 20 points)

1. Chloroplasts – structure and function.
2. The most remarkable events that take place in prophase and metaphase.

BIOLOGY ENTRANCE EXAM – 08

I. One point is given for each correct answer.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)	X							X				X		X	
b)				X	X		X			X					X
c)			X			X			X				X		
d)		X									X				

II. One point is given for each correct answer.

(max. 5 points)

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

III. Two points are given for each correct answer.

(max. 8 points)

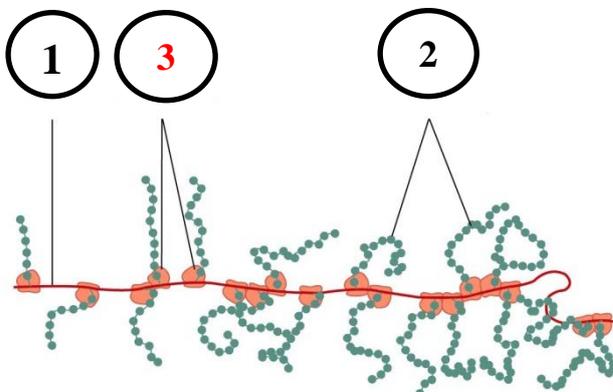
IV. One point is given for each correct answer.

(max. 8 points)

	DNA	Proteins
Monomers	nucleotides	Amino acids
Chemical bonds between monomers	phosphodiester	peptide
Biological properties	main hereditary molecule	structural, regulatory, transport, protective, catalytic

V. One point is given for each correct answer.

(max. 4 points)



B. A polyribosome/polysome

VI. One point is given for each correct answer and two points for the question

(max. 10 points)

False	True
1. lymphatic	1. blood
2. tendon	2. ventricle
3. two	3. three
4. myocardium	4. endocardium

2. Which is the outermost layer of the heart wall? EPICARDIUM

VII. Describe and explain

(max. 20 points)

1. Chloroplasts – structure and function
2. The most remarkable events that take place in prophase and metaphase

BIOLOGY ENTRANCE EXAM – 09

I. Answer the following questions and mark the correct answers with an (X) in the table below. *(max. 15 points)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)															
b)															
c)															
d)															

1. Blood group B erythrocytes contain:

- a) antibodies β
- b) antigens B
- c) antibodies α, β
- d) antigens A

2. Trypsin brakes down:

- a) carbohydrates
- b) lipids
- c) water
- d) proteins

3. Which one is a limb muscle?

- a) trapezius
- b) latissimus dorsi
- c) biceps
- d) large pectoral muscle

4. Which bone is not a part of the skeleton of the free upper limb?

- a) humerus
- b) ulna
- c) radius
- d) shoulder blade

5. Which one is not a type of connective tissue?

- a) blood tissue
- b) bone tissue
- c) glandular tissue
- d) cartilaginous tissue

6. The basic structural and functional unit of the kidney is:

- a) renal capsule
- b) nephron
- c) Malpighian body
- d) glomerulus

7. The ear ossicles are located in the:

- a) external ear
- b) inner ear
- c) middle ear
- d) organ of Corti

8. The iris is situated behind the:

- a) sclera

b) retina

c) pupil

d) cornea

9. The process of protein synthesis is:

- a) replication
- b) translation
- c) transcription
- d) duplication

10. HIV affects:

- a) myocytes
- b) erythrocytes
- c) lymphocytes
- d) hepatocytes

11. The primary protein structure is not determined by amino acid residues':

- a) number
- b) folding
- c) type
- d) arrangement

12. Prokaryotes are:

- a) eubacteria and cyanobacteria
- b) viruses and prions
- c) cyanobacteria and phages
- d) viruses and eubacteria

13. The nitrogen bases in DNA are:

- a) A, T, U, C
- b) T, A, G, C
- c) A, U, T, G
- d) G, C, U, T

14. The Golgi complex consists of:

- a) cisternae and vesicles
- b) cristae and matrix
- c) granum and stroma
- d) stroma and cisternae

15. The DNA molecules are:

- a) composed of amino acids
- b) single stranded
- c) double stranded
- d) adaptable

II. Which of the following statements are correct? Mark them with an (X) in the table below. *(max. 5 points)*

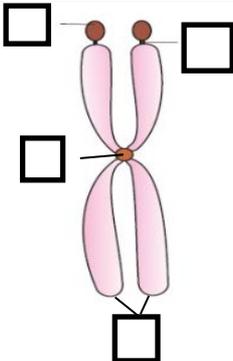
1	2	3	4	5	6	7	8	9	10	11	12

1. Polypeptide chains consist of nucleotides.
2. The tertiary structure of the proteins is the folding of the chain in space.
3. Peroxisomes are nonmembrane-bound organelles.
4. The chromatin is a complex of DNA and proteins.
5. Replication is the process of RNA production.
6. Meiosis is a process of cell division in which haploid cells are produced.
7. The epidermal cells are restored through the division of living cells in the deeper layers.
8. Erythrocytes are cells with a nucleus in the shape of biconcave discs.
9. Carbohydrates are the basic source of energy for the cells.
10. The exchange of oxygen and carbon dioxide takes place through the trachea.
11. The zygote is a haploid cell.
12. Oxytocin stimulates the production of milk.

III. Give a short definition for the following terms: *(max. 8 points)*

1. Centromere.....
.....
2. Neuron.....
.....
3. Polysome.....
.....
4. Rods.....
.....

IV. A. Label the parts on the figure. *(max. 4 points)*

	<ol style="list-style-type: none"> 1. Centromere 2. Secondary constriction 3. Satellite 4. Sister chromatids
---	--

V. Fill in the table:

(max. 8 points)

Criteria	Replication	Transcription
Template		
Substrates		
Main enzyme		
Final product		

VI. Read the text and answer the question.

(max. 10 points)

The sequence of cell growth, its preparation for division and the division of two daughter cells is called mitosis. The most important process in preparation for mitosis is the doubling of genetic material - production of RNA. During interphase the cell decreases in mass by synthesis of diverse proteins. In result of mitosis from one diploid mother cell 4 daughter cells are formed.

1. There are 4 false words in the text. Write them in the table and provide their true counterparts.

False	True
1.	1.
2.	2.
3.	3.
4.	4.

2. How is called the division of the cytoplasm?

.....

VII. Describe and explain:

(max. 20 points)

1. Systemic and pulmonary circulation
2. Heart – localization, wall structure, main parts, function

BIOLOGY ENTRANCE EXAM – 09

I. One point is given for each correct answer.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)								X				X		X	
b)	X					X			X		X		X		
c)			X		X		X			X					X
d)		X		X											

II. One point is given for each correct answer.

(max. 5 points)

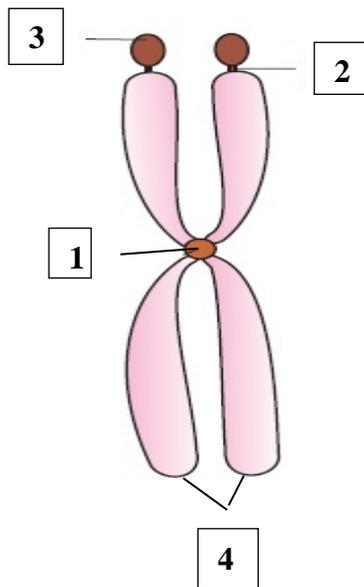
1	2	3	4	5	6	7	8	9	10	11	12
	X		X		X	X		X			

III. Two points are given for each correct answer.

(max. 8 points)

IV. One point is given for each correct answer.

(max. 4 points)



V. One point is given for each correct answer.

(max. 8 points)

Criteria	Replication	Transcription
Template	DNA	DNA
Substrates	deoxyribonucleotides	ribonucleotides
Main enzyme	DNA polymerase	RNA polymerase
Final product	DNA	RNA

VI. One point is given for each correct answer and two points for the question.

(max. 10 points)

False	True
1. mitosis	1. cell cycle
2. RNA	2. DNA
3. decreases	3. increases
4. 4	4. 2

2. How is called the division of the cytoplasm? CYTOKINESIS

VII. Describe and explain:

(max. 20 points)

1. Systemic and pulmonary circulation
2. Heart – localization, wall structure, main parts, function

BIOLOGY ENTRANCE EXAM – 10

I. Answer the following questions and mark the correct answers with an (X) in the table below. *(max. 15 points)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)															
b)															
c)															
d)															

1. Blood group A erythrocytes possess:

- a) antibodies α
- b) antigens B
- c) antibodies α, β
- d) antigens A

2. Pepsin brakes down:

- a) carbohydrates
- b) lipids
- c) mucus
- d) proteins

3. Which function is not typical for the skin?

- a) protective
- b) thermoregulative
- c) contractile
- d) excretory

4. Lumbar vertebrae are:

- a) largest in size
- b) triangular in shape
- c) smallest in size
- d) 12

5. The biceps:

- a) extends the elbow
- b) flexes the elbow
- c) flexes the foot in the ankle
- d) extends the foot in the ankle

6. Erythrocytes:

- a) have a protective function
- b) are several types
- c) participate in blood clotting
- d) are without nuclei

7. Glucocorticoids:

- a) are produced by the thyroid gland
- b) stimulate body growth
- c) regulate metabolism of mineral salts
- d) regulate metabolism of organic compounds

8. The spinal cord is:

- a) covered with two membranes
- b) surrounded by a canal filled with liquid

- c) made up of grey and white matter
- d) about 1 cm long

9. The mitochondria:

- a) are enclosed by one membrane
- b) consist of granum and stroma
- c) consist of cristae and matrix
- d) use the light energy source

10. The viroids are:

- a) viruses
- b) bacteria
- c) phages
- d) single stranded RNA molecules

11. During anaphase the chromosomes:

- a) move independently
- b) are most compact
- c) consist of normal quantity of DNA
- d) are aligned in the equatorial plane

12. Eukaryotes are:

- a) plant and animal cells
- b) eubacteria and cyanobacteria
- c) viruses and prions
- d) cyanobacteria and phages

13. In which of the following the genetic code is written?

- a) lipids
- b) nucleus acids
- c) carbohydrates
- d) proteins

14. The endoplasmic reticulum consists of:

- a) flat tube-like tanks and vesicles
- b) cristae and matrix
- c) granum and stroma
- d) stroma and cisternae

15. The most important event during interphase is:

- a) reverse transcription
- b) transcription
- c) DNA-replication
- d) translation

II. Which of the following statements are correct? Mark them with an (X) in the table below.
(max. 5 points)

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

1. Lysosomes are membrane-bound organelles.
2. The polysome is a structure consisting of a DNA molecule connected to several ribosomes.
3. The triplet in a DNA molecule coding for one amino acid is called gene.
4. Denaturation shows that the folding of the polypeptide chain is determined by the primary structure.
5. Transcription is the process of RNA production.
6. Mitosis is a type of cell division which is the basis of asexual reproduction.
7. The smooth muscle tissue forms the skeletal muscles.
8. The bones are long, short and flat.
9. Urine production takes place in the nephrons.
10. Systemic circulation starts with the pulmonary artery.
11. The inner side of the lungs is covered with the pleura.
12. The suprarenal glands have both exocrine and endocrine secretion.

III. Give a short definition for the following terms: *(max. 10 points)*

1. Zygote.....

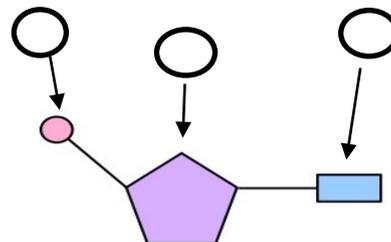
2. Genetic code.....

3. Axon.....

4. Nephron

IV. Label the parts on the figure.
(max. 4 points)

1. pentose sugar
2. phosphate group
3. nitrogenous base
4. What is this structure?.....



V. Fill in the table:*(max. 8 points)*

	Somatotropin	Adrenaline
Organ of production		
Effects		

VI. Read the text and answer the question.*(max. 10 points)*

The process of RNA synthesis is called replication. There are three types of RNA present in every cell - messenger (mRNA), transfer (tRNA) and ribosomal (rRNA). rRNA is a double stranded molecule that builds up the ribosomes. tRNA binds the amino acid and transfers it to the corresponding anticodon on mRNA. Amino acids are bound to each other by phosphodiester bonds.

1. There are 4 false words in the text. Write them in the table and provide their true counterparts.

False	True
1.	1.
2.	2.
3.	3.
4.	4.

2. How is called the process of protein synthesis?

.....

VII. Describe and explain:*(max. 20 points)*

1. The structure of the lungs and principle of gas exchanging.
2. Structure of the eukaryotic nucleus

BIOLOGY ENTRANCE EXAM – 10

I. One point is given for each correct answer.

(max. 15 points)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)				X								X		X	
b)					X								X		
c)			X					X	X		X				X
d)	X	X				X	X			X					

II. One point is given for each correct answer.

(max. 5 points)

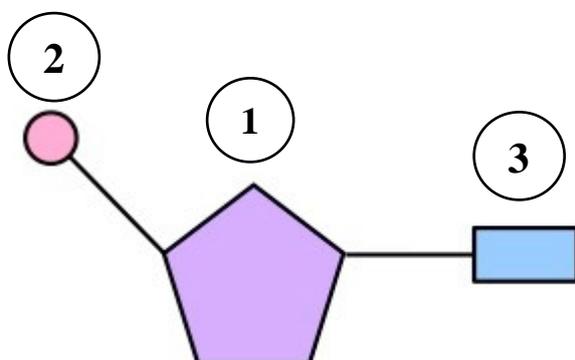
1	2	3	4	5	6	7	8	9	10	11	12
X				X	X		X	X			

III. Two points are given for each correct answer.

(max. 8 points)

IV. One point is given for each correct answer.

(max. 4 points)



4. NUCLEOTIDE

V. Two points are given for each correct answer.

(max. 8 points)

	Somatotropin	Adrenaline
Organ of production	Anterior part of pituitary gland	Medullar part of suprarenal gland
Effects	Stimulates body growth and accelerates protein production in the cells	Affects conditions of stress and adaptation

VI. One point is given for each correct answer and two points for the question.

(max. 10 points)

False	True
1. replication	1. transcription
2. double	2. single
3. anticodon	3. codon
4. phosphodiester	4. peptide

2. How is called the process of protein synthesis? TRANSLATION

VII. Describe and explain:

(max. 20 points)

1. The structure of the lungs and principle of gas exchanging
2. Main structures of the eukaryotic nucleus