

TOPICS FOR ENTRANCE EXAMS TO THE FACULTY OF HEALTH SCIENCES, PALACKY UNIVERSITY

□ HUMAN BIOLOGY (SOMATOLOGY)

Recommended study topics

Cytology, genetics, organism evolution, classification of biological and medical disciplines

Classification of biological scientific disciplines

Classification of medical scientific disciplines

Origin of life on Earth

Basics of the biological evolution

Basics of human development

Organism hierarchy as per complexity

Cell – general structure of prokaryotic and eukaryotic cells

Cell division – mitosis and meiosis

Basics of genetics – chromosome structure, gene, gene expression, mutation

Heredity types

Most important hereditary disorders in humans

Functional anatomy of tissues

Epitheliums, connecting tissues, muscle tissue, nerve tissue

Body growth and orientation

Expressions used for body orientation

Locomotor system – bones

Human skeletal system

Types of bones, bone growth

Bone connections

Types of joints

Torso, head, limb skeleton

Locomotor system – muscles

Types of muscle tissue, its structure, innervation and function

Functional anatomy of muscles

Blood

Blood and blood plasma composition

Blood functions

Blood types

Basics of body immune reactions – antigen and antibody

Immunocompetent cells

Specific and non-specific immunity

Blood circulation

Types of vessels, their structure and function

Structure and function of the heart

Blood circulation

Lymphatic system

Respiratory system

Internal and external respiration

Nasopharynx and pharynx

Upper and lower respiratory tract

Structure and function of the lungs

Respiratory function assessment, respiratory centre, muscles of respiration

Asthma

Digestive system

Gastrointestinal tract, its components and functions

Gastric juices

Metabolic function of the liver

Physiology of nutrition

Water, saccharides, proteins, fats – their function in the body

Vitamins and their function

Thermoregulation

Temperature regulation in the body

Urinary tract

Structure and function of kidneys, their role in the body and regulation of their function

Production of urine, urinary duct, bladder function

Skin

Composition and function of the skin, skin derivatives

Types of skin glands

Body hair

Metabolism

Endocrine glands, hormones and their functions

Tissue hormones

Nervous system and Neuroregulation

Functional structure of the nervous tissue

Reflexes

Central nervous system, peripheral nerves

Functions of the individual brain and spinal cord parts

Receptors

Types of receptors and their function

Sensory systems

Genital system

Genital system of a man, genital system of a woman - menstrual cycle, embryonic development

Sexually transmitted diseases

Oogenesis, spermatogenesis

Postnatal development of a child

Development of the bone tissue and muscle system of a child

Development of the respiratory system, excretory system and skin glands, development of body hair of a child

Thermoregulation of an infant

Development of the central nervous system, conditional and unconditional reflexes

Receptor function development

Periods of human life

Types of questions at the entrance exam

A written test with questions where one of the choices offered is always correct

Examples of test questions

Which of the following disorders is not hereditary?

A) haemophilia

B) daltonism

C) congenital iodine deficiency syndrome

D) Down syndrome

Specific immunity is manifested (by)

- A) development of antibodies
- B) phagocytosis of lymphocytes
- C) destruction of bacteria with lysozyme in saliva
- D) as a congenital ability

□ **NATURAL SCIENCE TOPICS**

Physics, Chemistry, Logic, General math

Examples of test questions

How fast do light waves propagate in a vacuum?

- A) approximately 330 m/s
- B) 300,000,000 m/s
- C) 0 km per hour
- D) none of the above is correct

What is the pH of a solution with the concentration of OH⁻ ions is $c(\text{OH}^-)=10^{-11}$ mol/l?

- A) pH = 11
- B) pH = 3
- C) pH = 10
- D) pH = 1

What is the resultant capacity of two condensers of 100 pF capacity, connected in parallel?

- A) 50 pF
- B) 200 pF
- C) 10000 pF
- D) 1 pF

How many grams of potassium chloride are needed to prepare 250g of 5% solution?

- A) 1.2 g
- B) more than 12 g
- C) 6 g
- D) 0.6 g

Complete the line of numbers: 8723 3872 2387 ?

- A) 7238
- B) 8327
- C) 2873
- D) 3278