

## **CONTEST TOPICS**

### **for position 19, ASSOCIATE PROFESSOR, discipline PHYSIOLOGY**

1. Water in the organism. Homeostasis. Composition of body fluid compartments. Hydro electrolytic equilibrium of the organism. Morphological and functional organization of cell membrane. Transport through the cell membrane
2. The neuron physiology. Resting membrane potential and action potential. Excitability and neuronal conduction function. Degeneration and regeneration of nervous fibers. Elementary about reflex activity. Receptors. Synapses and synaptic transmission
3. Physiology of muscle fiber. Striated muscle –structure and composition. Mechanism of muscular contraction. Chemical reactions during muscle contraction. Mechanical effects of muscular contraction. Neuromuscular junction. Electromyogram. Smooth muscle
4. Energetic metabolism and nutrition. Energy requirements of the body Basal metabolism. Variable energetic expenditure. Principles of physiological alimentation
5. Physiology of gastrointestinal tract. The functional structure of digestive tract. Electrical activity of gastrointestinal muscles. General mechanisms of regulation in gastrointestinal tract. Enteric nervous system
6. Digestion in the oral cavity and stomach. Salivary secretion and regulation of salivary secretion. Mastication. Deglutition. Gastric secretion –composition. Secretion of hydrochloric acid. Regulation and phases of gastric secretion. Gastric motility. Vomiting reflex
7. Digestion in the small and large intestine. Pancreatic secretion and regulation of pancreatic secretion. Liver physiology. Bile – composition, regulation of biliary secretion and evacuation of the gall bladder Intestinal secretion (enteric juice) and motility. Regulation of intestinal secretion. Digestion and absorption of alimentary principles, water and electrolytes through the intestinal mucosa. Colon - movements of colon, intestinal flora and gases. Feces and defecation
8. Physiology of blood. Blood functions and properties. Plasma and its balances: hydro-electrolytic, acid base. Composition of plasma. Physiology of plasma proteins. Hematopoiesis. Physiology of erythrocytes. Physiology of leukocytes. Primary and secondary hemostasis. Platelets physiology. Mechanisms of blood coagulation. Fibrinolysis.
9. Blood circulation. Heart structure. Functional properties of the myocardium. Cardiac cycle or physiological cardiac revolution. Manifestations of cardiac activity: heart sounds, apex shock. Physiology of arterial, venous and capillary circulation. Lymphatic circulation
10. Renal excretion. Kidney functions. Glomerular filtration. Tubular reabsorption. Tubular secretion. Urine composition. Urination and physiology of the ureters and bladder
11. Respiratory physiology. The functional role of the respiratory system. Pulmonary ventilation. Inspiration. Expiration. Alveolar gas exchange. Transport of respiratory gases in the blood. Respiratory regulation. Regulation of respiration.

## **BIBLIOGRAPHY**

1. Guyton and Hall Textbook of Medical Physiology (Guyton Physiology), Editia 13, 2018
2. Kim E. Barrett, Susan M. Barman, Heddwen L. Brooks, Jason X.-J. Yuan, Ganong's Review of Medical Physiology, Twenty six edition, Mc Graw Hill Education, 2019
3. Boron & Boulpaep, Medical Physiology, 3rd Edition, 2016 in limba romana
4. Hăulică, I., Fiziologie, Ed. Medicală, 2007

**Head of department**

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