

TEMATICA DE CONCURS
POZIȚIA 63, ASISTENT UNIVERSITAR

THEORETICAL PART

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. Physiology of blood. Blood functions and properties. Plasma and its balances: hydro-electrolytic, acid base. Composition of plasma. Physiology of plasma proteins.
5. Physiology of blood. Hematopoiesis. Physiology of erythrocytes
6. Physiology of blood. Physiology of leukocytes
7. Physiology of blood. Primary and secondary hemostasis. Platelets physiology. Mechanisms of blood coagulation. Fibrinolysis
8. 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
9. 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
10. Digestion in the small and large intestine. Pancreatic secretion and regulation of pancreatic secretion. 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
11. Digestion in the small and large intestine. Liver physiology. Bile – composition, regulation of biliary secretion and evacuation of the gall bladder
12. Physiology of cardiac muscle, cardiac cycle
13. Specialized excitatory and conductive system of the heart. Control of excitation and conduction in the heart
14. Characteristics of normal electrocardiogram.
15. Arterial pressure. Veins and their function

16. Microcirculation and lymphatic system
17. Nervous regulation of blood pressure, renal regulation of blood pressure
18. Cardiac output and regulation
19. Pulmonary ventilation
20. Principles of gas exchange
21. Transport of respiratory gases
22. Breathing Regulation
23. Physiological anatomy of the kidneys
24. Glomerular filtration and its control
25. Tubular reabsorption and secretion
26. General notions of the physiology of the endocrine system. General notions about hormones. Mechanisms of hormonal action.
27. Physiology of the pituitary gland - Adenohypophysis
28. Neurohypophysis
29. Physiology of the thyroid gland
30. Calcium and phosphorus homeostasis
31. Physiology of the endocrine pancreas
32. Physiology of the adrenal glands
33. Physiology of the male reproductive system
34. Physiology of the female reproductive system
35. The sensory division of the nervous system
36. Somatic sensitivity. Receptors and pathways. Physiology of pain
37. Thalamus. Somatosensitive cortex
38. Proprioceptors. Motor division of the nervous system. Somatomotor cortex. Pyramidal and extrapyramidal pathways
39. Basal ganglia physiology. Reticular formation
40. Physiology of the cerebellum
41. Physiology of the hypothalamus
42. Physiology of the autonomic nervous system

PRACTICAL PART

1. Permeability of cell membrane (osmosis). Resting membrane potential and action potential of muscle

2. Study of reflex arc
3. Electromyogram in BIOPAC SYSTEM
4. Exploration of plasma proteins
5. Exploration of acid-base balance
6. Exploration of red blood cells. Determination of hematocrit. Measurement of hemoglobin concentration. Erythrocytes' constants and indices.
7. Blood groups determination: O-A-B and Rh. Transfusion. Erythrocytes' sedimentation rate
8. Exploration of white blood cells.
9. Exploration of hemostasis. Coagulation. Exploration of fibrinolysis
10. Assessment of gastric secretion
11. Assessment of pancreatic and biliary secretion.
12. Amylasemia. Amylasuria
13. Functional evaluation of the liver
14. Clinical examination of cardiovascular system. Examination of heart sounds
15. Examination of arterial pulse
16. Electrocardiography
17. Blood pressure measurement
18. Blood pressure interpretation
19. Spirometry. Obstructive and restrictive lung diseases. Pulmonary movements
20. Clinical examination of respiratory system
21. Glomerular filtration rate. Urine analysis
22. Assessment of pituitary gland function
23. Assessment of thyroid gland function
24. Assessment of phosphate and calcium metabolism
25. Assessment of endocrine pancreas function
26. Assessment of adrenal gland function
27. Assessment of the function of the male reproductive system
28. Assessment of the function of the female reproductive system
29. Assessment of cutaneous sensitivity
30. Assessment of myotatic reflexes

31. Assessment of superficial and visceral reflexes

32. Electroencephalography

Bibliography

1. Boron & Boulpaep, Medical Physiology, 3rd Edition, 2016

2. Guyton and Hall , Textbook of Medical Physiology, Elsevier, ISBN 9781455770052, 2018

3. Ganong W.F. , Review of Medical Physiology, Twenty fourth edition, Appleton and Lange Comp., 2012

4. Wallach's Interpretation of diagnostic tests, Ninth edition, 2011

5. Frances Fischbach, Marshall B. Dunning III, A manual of Laboratory and diagnostic tests, Eighth Edition, Lippincott Williams & Wilkins, 2009

**Director de departament,
Prof. univ. dr. habil. Dana Carmen Zaha**