SYNOPSIS
FOR THE PHYSIOLOGY EXAMINATION
2015/2016 academic year

3. Active transport through the cell membrane - primary and secondary active transport. Ingestion by the cell - endocytosis. Transport through cellular sheets.
14. Leukocytes (white blood cells). Types of white blood cells. Defensive properties of neutrophils and macrophages.
16. Resistance of the body to infection. Innate and acquired immunity.
17. Blood groups. Transfusion reactions resulting from mismatched blood types.
19. Electrical activity of the heart. Spread of the cardiac impulse through the heart. The normal electrocardiogram.
22. Extrinsic regulation of heart. Control of the heart by autonomic nervous system. Chemical control.
23. Physical characteristics of the circulation. Interrelationships among pressure, flow and resistance.
26. Local, nervous and humoral regulation of the circulation.
27. Veins and their function.
28. Role of the nervous system in rapid control of arterial pressure.
29. Long-term control of arterial pressure.
30. The integrated system for arterial pressure regulation.
33. Physical principles of gas exchange. Diffusion of oxygen and carbon dioxide through the respiratory membrane. Diffusing capacity.
34. Uptake of oxygen by the pulmonary blood. Transport of oxygen in the blood. Oxygen-hemoglobin dissociation curve.
35. Diffusion of carbon dioxide from the tissue into the tissue capillaries and from the pulmonary capillaries into alveoli. Transport of carbon dioxide in the blood.
36. Regulation of respiration. Respiratory center. Chemical control of respiration - direct chemical control of respiration and peripheral chemoreceptor system.
37. Respiratory physiology of high altitude, aviation and hyperbaric conditions.
41. Secretion of the saliva. Composition and function of the saliva. Regulation of salivary secretion.
42. Gastric secretion. Regulation of gastric secretion.
43. Pancreatic secretion. Regulation.
44. Secretion of the bile by the liver. Secretion of the small intestine. Regulation.
45. Basic principles of gastrointestinal absorption. Absorption of water, ions and vitamins.
46. Digestion and absorption of proteins in the gastrointestinal tract.
47. Digestion and absorption of fats in the gastrointestinal tract.
48. Digestion and absorption of carbohydrates in the gastrointestinal tract.
49. Liver. Metabolic functions of the liver. Excretion of bilirubin in the bile.
51. Vitamins and minerals. Functions and daily requirements. Trace elements.
54. Lipid metabolism. Regulation of fat utilization.
57. Urine formation. Reabsorption and secretion along different parts of the nephron.
63. Function of the anterior pituitary gland. Control of pituitary secretion by the hypothalamus. Physiological functions of growth hormone.
64. The posterior pituitary gland and its relation to the hypothalamus. Physiological function of antidiuretic hormone and oxytocin.
65. The thyroid gland. Functions of the thyroid metabolic hormones. Regulation of thyroid hormone secretion.
66. Parathyroid hormone, Calcitonin, calcium and phosphate metabolism.
68. The adrenal glands. Functions of the mineralcorticoids.
69. The adrenal glands. Functions of the glucocorticoids.
71. Reproductive and hormonal function of the male. Functions of testosterone. Control of male sexual functions by hypothalamus and anterior pituitary gland.
72. Female physiology before pregnancy. The monthly ovarian cycle and function of the gonadotropic hormones. Functions of the ovarian hormones. The monthly endometrial cycle and menstruation. Interplay between the ovarian and hypothalamic-pituitary hormones.
74. Types of sensory receptors. Receptor potentials. Adaptation of receptors.
77. The vestibular system. The vestibular apparatus and vestibular sensations. The maintenance of equilibrium.
78. The auditory system. External, middle and inner ear. Sound transmission. Function of the organ of Corti.
80. The eye. Optics of vision.
82. The visual system. Fields of vision, perimetry. Eye movements and their control. Fusion of the visual images from the two eyes. Light and dark adaptation. Color vision.
83. The chemical senses - taste and smell.
86. The cerebellum and its motor functions.
87. The basal ganglia and their motor functions. Diseases of the basal ganglia.
88. Cortical control of motor function.
90. States of brain activity. Sleep - basic theories of sleep, the cycle between sleep and wakefulness.
91. The autonomic nervous system - basic characteristics of sympathetic and parasympathetic function. Functions of the adrenal medulla. "Alarm" or "stress" response of the sympathetic nervous system.
92. Vegetative and endocrine control functions of the hypothalamus.
94. Cerebral cortex. Functions of specific cortical areas. Cerebral dominant.
95. Cerebral cortex. Intellectual functions of the brain. Learning and memory.
96. The cardiovascular system in exercise. Muscle blood flow and cardiac output during exercise.
97. Respiration and oxygen consumption in exercise.
98. Body heat production, fluids and salts in exercise.

RECOMMENDED LITERATURE:


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