Questions from regulations

1. Control of the volume, composition and pH of the body fluids
2. Mechanisms and factors controling hemopoesis
3. Hemodynamic centre, control mechanisms of the cardiovascular system
4. Regulation of the heart activity - intracardial mechanisms
5. Regulation of the heart activity – extracardial mechanisms
6. Regulation of the blood pressure
7. Regulation of the vascular tone and vasomotor centre
8. Regulation of the blood volume
9. Respiratory centre, control mechanisms of the breathing
10. Reflex regulation of the breathing
11. Chemoregulation of the breathing, suprapontine mechanisms of the breathing
12. Control of the motility and secretion of the digestive system
13. Review of the gastrointestinal hormones
14. Mechanisms of the thermoregulation
15. The role of the kidneys at homeostasis of the internal environment
16. Regulation of the kidney activities
17. Kidneys and endocrine functions, juxtaglomerular apparatus
18. Hormones, distribution, meaning
19. Control of the secretion of hormones
20. Mechanisms of the hormone actions to the target cells
21. Hormonal regulation of the nutrient metabolisms
22. Regulation of the secretion and mechanism of the mineralocorticoid action
23. The meaning of the growth hormone and prolactin
24. Langerhans islands, production and hormone effects
25. Functional morphology of the hypothalamo – pituitary gland system
26. Physiology of the thyroid gland
27. Composition and function of the adrenal medulla
28. Physiology of the parathyroid glands
29. Hormonal regulation of ions and water in organism
30. Composition and function of the adrenal cortex, production of hormones, control
31. Anterior pituitary gland
32. Epiphysis, thymus, atrial natriuretic factor
33. Hormones of the posterior pituitary gland
34. Hormonal systems bounding up with reproduction, gravidity
35. Ovarial and menstrual cycles
36. Endocrine function of ovarium
37. Endocrine function of testes
38. Endocrine function of liver kidneys and hypothalamus
39. Lactation and its control, composition of the milk
40. Tissue hormones, characteristics, review
41. Rewiev of the control of somatic motor activities
42. Regulation of the muscular tone
43. Structure and function of the proprioreceptors
44. Function of the spinal cord, spinal reflexes
45. Flexor and extensor reflexes of the spinal cord
46. Spinal centres of somatomotor activity, alfa and gama motoneurons
47. Function and pathways of the spinal cord, spinal shoc
48. Brain stem - functions

49. Postural and righting reflexes
50. Formatio reticularis, structures, functions, descendent system
51. Functions of the basal ganglia
52. Regulation of the somatic functions by cerebellum
53. Cortical motor areas
54. Control mechanisms of the voluntary movements
55. Comparison of the pyramidal and extrapyramidal control of the motor activity
56. Regulation of the autonomic functions
57. Autonomics centres, spinal cord – brain cortex
58. Functions of the hypothalamus
59. Efferent and afferent part of the sympathetic nervous system
60. Efferent and afferent part of the parasympathetic nervous system
61. Corticovisceral relations
62. Integrative and associative functions of CNS
63. Functions of the reticular formation – ascendent system
64. Functions of the thalamus
65. Functions of the limbic system
66. Neocortex, composition, regions
67. Specific sensory areas of the cerebral cortex
68. Associative regions of the cerebral cortex, prefrontal region, dominancy of hemisphers
69. Reflex and its single parts, classification of reflexes
70. Unconditioned reflexes, motivations, emotions, instincts
71. Conditioned reflexes – distribution, functions
72. Unconditioned inhibition
73. Conditioned inhibition
74. Types of the higher nervous activity
75. Mechanisms of the learning and memory
76. Higher nervous activity – basic ideas

Questions from the systematic physiology

1. Physiology of the cell
2. The movements of the substances through cell membrane
3. Homeostasis
4. Body fluids - distribution, composition, measurement
5. Production of the interstitial fluid, transport of the fluid through capillary wall
6. Water in the human body, input, loss, output, regulation
7. Blood and homeostasis, blood sampling
8. Blood functions, general properties, proof of the blood
9. Blood as buffer system
10. Examination of the hematocrit value, erythrocytes sedimentation rate
11. Red blood cell values
12. Blood plasma - composition (values), volume and its changes
13. Plasma proteins, amount, functions
14. Red blood cells - morphology, functions, determination of the red blood cell count
15. Hemoglobin - molecule, types, amount, derivates, methods of the examination
16. Erythropoesis
17. The important factors needed for the production and development of erythrocytes
18. White blood cells – functional morphology, classification, examination
19. Granulocytes - functions, production, kinesis, differentiation

20. Agranulocytes - functions, differentiation
21. Platelets - morphology, composition, count
22. Platelet functions, methods of examination
23. Hemostasis – phases of hemostasis
24. Hemocoagulation
25. Factors influencing hemocoagulation
26. Cascade of the hemocoagulation, fibrinolysis
27. Bleeding, blood clotting, examination of the hemocoagulation factors
28. Blood groups - ABH, Rh, meaning, examination
29. Antigens , HLA system, principles of the blood transfusion
30. Function of spleen
31. Nonspecific imune mechanisms
32. Specific imune mechanisms
33. Review of the circulation and functions of its single parts
34. Pfysiology of the heart - functions, structures, properties
35. Resting and action potencial of myocardium
36. Conductive system of the heart, arise and condution of the impluses in the heart
37. Electrical events of the heart activity, principle of electrocardiography, leads
38. Recording and evaluation of EKG
39. Physiological electrocardiogram - values
40. Relation of the excitation and contraction in the heart muscle
41. Excitability and refractery periods of the myocardium
42. Heart cycle, volumes, systolic time intervals
43. Manifestation of the heart activity - mechanical
44. Heart sounds, auscultation of the heart, phonocardiografy
45. Myocardial metabolism, work and performance of the heart, effectiveness of the heart work
46. Autonomics reflexes acting on the heart
47. Physical priciples of the blood flow in vessels
48. Blood pressure in the heart and in the single parts of the blood circulation - values
49. Measurement of the blood pressure - factors influencing the blood pressure values
50. Characteristics of hemodynamics in the high-pressure system
51. Hemodynamics in the low-pressure system
52. Characteristics of hemodynamics in the capillary bed
53. Differences of the pulmonary, systemic and fetal blood circulation
54. Blood circulation in the skin, splanchnic region and skeletal muscle
55. Coronary circulation and its peculiarities, blood circulation in the brain
56. Functional meaning of the respiratory system
57. Review of the respiratory system, lung volumes and capacities
58. Mechanics of the breathing, respiratory muscles, Hering's model of breathing
59. Pleural, alveolar, transpulmonary and intrapulmonary pressures
60. Valsalve's and Muller's experiments
61. Alveolar and atmospheric air – composition
62. Gas exchange – dead space, alveolar ventilation
63. Alveolar surface tension, surfactant, compliance and elastance, respiratory work
64. Diffusion of gases, ventilation – perfusion ratio
65. O_2 transport by blood, binding curve
66. CO_2 transport by blood
67. Gas exchange in the tissues
68. Static and dynamic determinats of the lung ventilation

69. Examination by Eutest, examination by Volutest
70. Hypoxia, effects of increased barometric pressure, hyperoxia
71. Protective respiratory mechanisms, artificial respiration
72. Nonrespiratory functions of the respiratory systém
73. Review of the digestive system and functions of single parts
74. Physiology of the mouth cavity
75. Physiology of stomach (digestion, resorbtion)
76. Gastric secretion and its regulation
77. Sampling of the gastric juice
78. Pancreatic juice, composition, regulation of secretion
79. Bile - production, composition, meaning and regulation of secretion
80. Functions of the liver
81. Activity of the small intestine, intestinal juice, motility
82. Large intestine, functions, activity, defecation
83. Digestion and absorption of carbohydrates
84. Digestion and absorption of lipids
85. Digestion and absorption of proteins
86. Metabolism of lipids
87. Metabolism of proteins, nitrogen balance
88. Metabolism of carbohydrates, glykemia
89. Principles of the appropriate nutrition, menu
90. Vitamins – review, hypo - and hypervitaminosis
91. Physiological meaning of vitamins soluble in lipids
92. Physiological meaning of vitamins soluble in water
93. Energetic metabolism
94. Measurement of the basal metabolic rate
95. Body temperature, reactions of organism on the temperature changes of the external environment
96. Chemical thermoregulation
97. Physical thermoregulation
98. Body temperature - measurement
99. Physiology of the skin
100. Activity of the sweat glands and neutralization ability of the skin
101. Review of the composition and functions of kidneys, renal circulation
102. Nephron, composition and function of single parts
103. Glomerular filtration, measuring
104. Activity of the tubular system in the kidneys
105. Countercurrent system, ultimate conversion of urine
106. Function of the urine ducts, miction reflex
107. Functional examinations of kidneys
108. Composition of urine, examinations - amount, density, pH, sugar
109. Composition of urine, examinations - pus, bile, proteins, blood
110. Functional characteristics of the skeletal, smooth and cardiac muscles
111. Skeletal muscle, properities, potentials, manifestations of activity
112. Neuromuscular junction, composition, function, mediator
113. Mechanics of the muscular contraction, fatigue, metabolism
114. Smooth muscle, properties, inervation
115. Physiology of the work, the influence of the work on single systems
116. Physiology of the work - bicycle ergometer
117. Composition and function of the nervous cell, properties

118. Resting membrane potential of the neurons and its changes
119. Stimulus, properties
120. Impuls and its manifestations, action potential of the nervous cell
121. Synapse, transmission of impuls, postsynaptic potentials
122. Mediators
123. Changes in the excitability of the nervous fibre, measure of the excitability
124. Classification of the nervous fibres, metabolism of the nervous tissue
125. Anatomical and functional relations between neurons
126. Pheripheral inhibition
128. Stress
127. Biorhythms
128. Electrical activity of the brain
129. Wakefulness and sleep
130. The first and second signaling systems
131. Specific properties of the nervous activity in men, speech
132. Receptors, properties, distribution
133. Physiology of taste, determination of the taste places on tangue
134. Physiology of smell, examination of smell sensation
135. Physiological meaning of vision
136. Optic apparatus of the eye, Purkyne figures, disorders of the optic system
137. Function of retina, oftalmoscopy
138. Visual pathway, visual cortex - perimetry
139. Determination of the near and far points, accomodation, visual acuity
140. Colour vision, determination of the colour-blindness, colour mixtures – Maxwell‘s discs
141. Hearing and its physiological meaning, physical properties of the sound
142. Functions of the middle and inner ear, auditory pathway
143. Central processing of the acoustic information
144. Examination of the hearing
145. Statokinetic apparatus, control mechanisms of the balance
146. Vestibular pathways - connections
147. Examination of the vestibular apparatus
148. Skin sensitivity, touch, pressure, thermoreception
149. Pain sensation
150. Physiology of the child’s age