1. Define physiology and specify its subjects of study.
2. Name and describe the graphic symbol of medicine.
3. Name the ethical principles (rules) imposed by the Hippocratic school of medicine.
4. Which scientist is considered “The Father of Physiology” and what are his major contributions to the development of medicine?
5. Define the following terms: tissue, organ, functional system.
6. Name the functional systems of the human body and indicate their main functions.
7. Define the extracellular environment and name its components.
8. Define the intracellular environment and name its components.
9. Define the living matter and name the chemical elements that form it.
10. Name the roles of Ca in the human body.
11. Name the roles of Na in the human body.
12. Name the roles of K in the human body.
13. Name the roles of P in the human body.
14. Name the roles of Mg in the human body.
15. Name the roles of Cl in the human body.
16. Name the roles of S in the human body.
17. Name the roles of Fe in the human body and the Fe carrier protein.
18. What is the normal blood Fe level and what are the consequences of Fe deficiency in the human body?
19. Name the roles of Cu in the human body and the Cu carrier protein.
20. Name the roles of Zn in the human body.
21. Name the roles of Co in the human body.
22. Name the roles of I in the human body.
23. What are the normal plasma levels of the main anions and cations?
26. Name the factors that induce variations of the physiological parameters.
27. Give a short description of the components of a homeostasis conservation mechanism.
28. Define a situation when the internal environment homeostasis deflects from the normal state.
30. Indicate the main types of homeostasis preservation mechanisms.
32. Give a short description of the cell membrane structure.
33. Name the major functions of the membrane proteins.
34. Name the two membrane characteristics of major significance for the functioning of the cell.
35. Name the factors that influence the selective permeability of the cell membrane.
36. List the types of transport through the cell membrane used for ions and other molecules.
37. Define passive transport and indicate its characteristics.
38. Define simple diffusion and indicate the types of substances carried through this mechanism.
39. Define aquaporins and name their function.
40. Define osmotic pressure and indicate its plasma value.
41. Name the factors that influence osmotic pressure.
42. Define osmolality and osmolarity of a solution and indicate their plasma values.
43. Give examples of isotonic - isoosmolal solutions. What happens to a cell in an isotonic environment?
44. Give examples of isotonic - isoosmolal solutions. What happens to a cell in a hypotonic environment?
45. Give examples of isotonic - isoosmolal solutions. What happens to a cell in a hypertonic environment?
46. Name the required osmotic characteristics of an infusion solution so that it does not change the plasma homeostasis.
47. Name the mechanisms that are triggered when a person is dehydrated.
48. Name the consequences of ingesting high quantities of salt for a person with normal blood volume.
49. Name the consequences of massive salts loss.
50. Define facilitated diffusion and give one example of a substance carried through this mechanism.
51. Define cell membrane depolarization and name the ion changes that occur after it.
52. Define cell membrane repolarization.
53. What is the membrane polarity at rest and what are the factors that determine it?
54. Name the ions involved in the resting and action potential.
55. Define active transport.
56. Classify the types of active transport.
57. Define the acinus and name its components.
58. Indicate the value of the intrathoracic pressure during inspiration.
59. Indicate the value of the intrathoracic pressure during exhalation.

76. Name the factor that determines the gas exchange between the atmosphere and lungs.
77. Name the components of the atmospheric air (including their %).
78. Indicate the partial pressures of O₂ and CO₂ in the atmospheric air.
79. Indicate the phases of the respiratory cycle and explain what happens in each of these phases.
80. Define dead space and indicate its capacity.
81. What are the roles of the dead space?
82. Which muscles participate in normal respiration?
83. What are the accessory inspiratory muscles?
84. What are the resting and effort expiratory muscles?
85. Define the following terms used in expressing functional respiratory parameters: real value, ideal value, reference (normal) value.
86. Define TV and name its normal (reference) values.
87. Define IRV and name its normal (reference) values in %.
88. Define ERV and name its normal (reference) values in %.
89. Define RV and name its normal (reference) values.
90. Define VC and name its components (with %).
91. Define and indicate the normal values of IC, FRC and TLC. Which of these capacities can be measured on the spirogram?
92. Define and name the normal values of the resting ventilation flow.
93. Define maximum ventilation flow and indicate its normal values.
94. Define oxygen consumption/ min and indicate its normal values.
95. Define FEV1 and the Tiffeneau index. Indicate their normal values.
96. Define pulmonary compliance.
97. Define the pulmonary surfactant and indicate its roles.
98. Indicate the partial pressures and volumes of O₂ and CO₂ in venous blood.
99. Indicate the partial pressures and volumes of O₂ and CO₂ in arterial blood.
100. Indicate the partial pressures of all gases and water vapors in the alveolar air.
101. Specify the general principle of gas exchange at the alveolar and capillary level.
102. Indicate the percentage of O₂ saturation of hemoglobin in arterial and venous blood.
103. Specify forms of O₂ transport in blood and the quantities for each form (volumes).
104. Specify forms of CO₂ transport in the blood and the quantities for each form (volumes).
105. Define restrictive syndrome; what pathological entities does it include and how are respiratory parameters altered?
106. Define obstructive syndrome, indicate what pathological entities it includes and in what manner are respiratory parameters altered?
107. Describe and draw schematically the small circulation and specify its alternate name.
108. List the roles of the functional lung circulation.
109. List the components of the alveolar-capillary barrier.
110. List the factors that influence the binding (attachment) and disposal (dissociation) of O₂.
111. Indicate the main reflexogenic areas with implications in the respiratory function.
112. Indicate the location of motor and coordinative respiratory centers.
113. Define digestion.
114. Specify organic substances that are predominant in the following foods: meat, oil, bread, cheese, butter, sugar.
115. Define the concept of digestive hormone. Give three examples.

116. Classify enzymes according to the substrate on which they act.

117. Specify which are the large salivary glands, their ducts and the type of secretion.

118. Indicate which are the salivatory nervous centers and their location.

119. What are the effects of parasympathetic stimulation on salivary glands? Specify which is the chemical mediator and the receptors on which it acts.

120. What are the effects of sympathetic stimulation on salivary glands? Specify which is the chemical mediator and the receptors on which it acts.

121. List the phases of salivation.

122. What is salivary amylase, on what substrate does it act and what are the resulting products?

123. What are the clinical names of increased and decreased salivary secretion?

124. What are the anatomical and functional parts of the stomach?

125. Specify the major functions of the stomach.

126. Name the factors that stimulate/inhibit gastric motility.

127. What are the gastric pH levels in adults and children?

128. What are the roles of the HCl from the gastric juice?

129. List the enzymes in the gastric juice and their substrates.

130. What is pepsin, where is it secreted, on what substrate does it act and what are the resulting products?

131. In what form (state) is pepsin secreted and how is it activated?

132. What is chymosin (rennin), where is it secreted, on what substrate does it act and what are the resulting products?

133. Specify the roles of the mucus secreted by the gastric mucosa.

134. Indicate the consequences of the degradation of the protective barrier of the stomach. Give examples of substances or other factors that can induce this alteration.

135. What is the intrinsic factor, what is its main purpose and what are the consequences of its deficiency?

136. List the phases of the gastric secretion and their prevailing regulation mechanisms.

137. What are the effects of parasympathetic stimulation on gastric secretion and motility?

138. What are the effects of parasympathetic stimulation on gastric secretion and motility, through what nerve are the stimuli transmitted, what receptors and chemical mediators are used?

139. What are the effects of sympathetic stimulation on gastric secretion and motility, what receptors and chemical mediators are used?

140. Which hormones inhibit gastric juice secretion?

141. What is gastrin, where is it secreted and what are its main functions?

142. What is histamine, on what receptors does it act and what is its influence on gastric secretion?

143. Indicate the effects of aspirin and NSAIDs on the gastric mucosa?

144. What are the clinical names of increased and decreased gastric juice acidity?

145. List the secretions involved in intestinal digestion.

146. List and classify the enzymes of the pancreatic juice.

147. What are the normal levels of amylasemia and amylasuria?

148. What is trypsin, where is it located, on what substrate does it act and what are the resulting products?

149. What is pancreatic lipase, on what substrate does it act and what are the resulting products?
150. What factors stimulate the nervous regulation of pancreatic juice secretion and what are the effects?
151. What hormones are involved in the humoral regulation of the pancreatic juice secretion?
152. What is secretin, where is it secreted and what is its effect on pancreatic juice secretion?
153. What is cholecystokinin (CCK), where is it secreted and how does it influence pancreatic juice secretion?
154. Which are the inhibitory/stimulating hormones of the pancreatic juice secretion?
155. What are choleretic/cholagogue substances?
156. Bile salts – specify them; roles in digestion?
157. Bile pigments – specify them; where do they originate, normal blood levels and consequences of their increase.
158. List and classify the enzymes of the intestinal juice.
159. What are the passive mechanisms of intestinal absorption?
160. What are the absorbable products which result after the digestion of carbohydrates, proteins, lipids?
161. Classify the bacterial flora of the bowel and indicate its location.
162. Specify the effects of parasympathetic and sympathetic stimulation on the motility of the GIT and digestive sphincters.
163. Locate the centers of deglutition, mastication and defecation.
164. Locate the centers of hunger/satiety.
165. What are the clinical names of excessive hunger/lack of appetite?
166. List the endocrine glands.
167. What are the secretion site and the main roles of oxytocin and ADH?
168. What is the hypothalamic-pituitary portal system and what are its roles?
169. Where is the GH secreted and what are its main roles?
170. What are somatomedins and what are their roles?
171. What is the hypothalamic–pituitary tract and what is its main role?
172. What are the secretion site and main roles of ACTH?
173. What are the secretion site and main roles of prolactin (PRL)?
174. What are the secretion site and main roles of gonadotropins (LH, FSH)?
175. Thyroid hormones – names, secretion site and effects on different organs.
176. What is the secretion site of glucocorticoids and mineralocorticoid hormones and what are the effects of cortisol on different apparatus?
177. What is the name of the masculine gonad and what is its purpose?
178. Androgen hormones – names, secretion site and roles.
179. What is the name of the feminine gonad and what is its purpose?
180. Estrogen hormones – names, secretion site and roles
181. Progesterone – definition, roles.
182. What are adrenaline (epinephrine) and noradrenalin (norepinephrine) and where are they secreted?
183. Parathyroid hormone (parathormone or parathyrin) – secretion site, roles.
184. Insulin – secretion site, roles.
185. What percentage of the body weight does the total muscle mass represent?
186. What are the contractile myofilaments of the sarcomere?
187. What are the modulating proteins of the sarcomere contraction?
188. Motor unit/motor plate – definition.
189. What is the main chemical mediator of the motor plate?
190. Isometric/Isotonic contraction – definition.
191. What is the morphologic and functional unit of the myofibril?
192. Twitch/Tetanus – definition.