Clinical Biochemistry Exam Items,
Faculty Medicine II, summer session, 2024-2025 academic year

APPROVED
at the meeting of the Department of Biochemistry
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1. For which reason would the laboratory have the right to reject the biological sample?
2. Reference values/intervals – select the true statements:
3. Select the errors specific to the pre-analytical stage:
4. Select the factor that can influence the quality of the collected biological material:
5. Select the factor that can influence the quality of the collected biological material:
6. Select the mistakes in patient preparation for laboratory investigation:
7. Select the non-modifiable factor associated with the patient that may influence the results of laboratory analyses:
8. Select the non-modifiable factor associated with the patient that may influence the results of laboratory analyses:
9. Select the non-modifiable factor associated with the patient that may influence the results of laboratory analyses:
10. Select the responsibilities of the attending physician at the pre-analytical stage of the biochemical laboratory diagnosis that ensures the quality of the analysis results:
11. Select the typical mistakes in the blood sampling procedure:
12. Sensitivity and specificity of laboratory tests – select the correct answers:
13. What activity is specific for the analytical stage of laboratory diagnosis?
14. What activity is specific to the analytical stage of laboratory diagnosis?
15. What activity must be carried out by the laboratory doctor at the pre-analytical stage of the laboratory diagnosis?
16. What activity must be carried out by the laboratory doctor at the pre-analytical stage of the laboratory diagnosis?
17. What activity must be carried out by the laboratory doctor at the pre-analytical stage of the laboratory diagnosis?
18. What activity must be carried out by the laboratory medicine specialist at the pre-analytical stage of the laboratory diagnosis?
19. What are the actions that can be taken by the laboratory in case of insufficient amount of biological material?
20. What are the benefits of biochemical laboratory methods for monitoring treatment?
21. What are the benefits of biochemical laboratory methods for monitoring treatment?

22. What can be determined when laboratory methods are used for diagnostic purposes?
23. What can be determined when laboratory methods are used for diagnostic purposes?
24. What factor will NOT determine errors in the clinician's decision at the post-analytical stage of the laboratory diagnosis?
25. What is one of the causes of the most frequent errors associated with performing the analysis?
26. What is one of the most common causes of errors associated with performing laboratory analysis?
27. What is the purpose of laboratory tests?
28. What kind of investigations are included in the spectrum of clinical laboratory diagnosis?
29. What kind of investigations are included in the spectrum of clinical laboratory diagnosis?
30. What kind of investigations are included in the spectrum of clinical laboratory diagnosis?
31. What physiological factors should be taken into account when evaluating the results of laboratory tests?
32. Which activities is the laboratory obliged to undertake in the field of standardization of laboratory equipment?
33. Which data should be included in the request form of the biochemical analysis?
34. Which factors influence the quality of reagents prepared "in house" (in the laboratory that performs the analysis)?
35. Which mistakes are associated with the analytical stage of laboratory diagnosis?
36. Why does hemolysis have a negative impact on the results of blood laboratory analyses?

a. What is the purpose of biochemical tests in treatment monitoring?
b. What is the purpose of laboratory tests?
c. What is the purpose of laboratory tests?
d. What mistakes of the attending physician at the preanalytical stage can affect the results of biochemical tests?
e. Which specialist is responsible for informing the patient about preparation for laboratory tests?

37. Select the mechanisms that ensure the propagation of the nerve impulse in the presynaptic neuron:
38. Choose the possible pathways of glutamate synthesis in glutamatergic neurons:
39. Select catecholamine neurotransmitter:
40. Select inhibitory neurotransmitters:
41. Select monoaminergic neuromodulator:
42. Select possible mechanisms for enhancing dopaminergic synaptic transmission:
43. Select serotonin precursor:

44. Select the aminoacidergic neurotransmitter:
45. Select the cholinergic neurotransmitter:
46. Select the compounds involved in neurotransmission with excitatory action:
47. Select the correct statements about acetylcholine:
48. Select the correct statements about Parkinson's disease:
49. Select the correct statements regarding GABA (gamma-aminobutyric acid):
50. Select the correct statements regarding MAO enzymes (monoamine oxidases):
51. Select the correct statements regarding myasthenia gravis:
52. Select the correct statements regarding NMDA (N-methyl-D-aspartate) receptors:
53. Select the correct statements regarding the neurotoxicity (excitotoxicity) of glutamate:
54. Select the enzyme required for histamine synthesis:
55. Select the enzymes involved in catabolism of catecholamine neurotransmitters:
56. Select the enzymes involved in serotonin synthesis:
57. Select the enzymes involved in the catabolism of GABA (gamma-aminobutyric acid):
58. Select the main enzyme involved in the catabolism of histamine:
59. Select the mechanisms that ensure the exocytosis of the neurotransmitter in the synaptic cleft:
60. Select the mechanisms that ensure the generation of a depolarizing postsynaptic action potential (excitatory postsynaptic potential):
61. Select the mechanisms that ensure the generation of a hyperpolarizing postsynaptic action potential (inhibitory postsynaptic potential):
62. Select the neurological conditions that can be caused by channelopathies (mutations of ion channels involved in the generation of membrane action potentials):
63. Select the neuronal protein inhibited by botulinum toxin:
64. Select the peptides with a role in neurotransmission:
65. Select the possible mechanisms of enhancement of GABA-ergic synaptic transmission:
66. Select the purinergic compound involved in nerve transmission:
67. Select the reactions and processes that occur in astrocytes (related to the role of astrocytes in glutamate and GABA metabolism):
68. Select the correct statements regarding myelin:
69. Select the correct statements regarding syntaxins:
70. Select the correct statements regarding the storage of neurotransmitters in synaptic vesicles:
71. Select the main way of obtaining energy in neurons:
72. Select the neurotransmitter that provides nerve transmission in the neuromuscular cleft:
73. Select the peptides with a role in neurotransmission:
74. Select the usage of glutamate in the nervous tissue:
75. All clinical manifestations and laboratory changes listed fall within the IDF

(International Diabetes Federations, 2005) criteria for defining the metabolic syndrome, with one exception:

76. All listed metabolic disorders contribute to the onset of diabetic ketoacidosis, with one exception:
77. All of the antibodies listed are markers of pancreatic autoimmunity in type 1 diabetes, with one exception:
78. All of the listed clinical conditions can lead to hypoglycemia, with one exception:
79. All of the listed factors can lead to a decrease in the level of glycated hemoglobin, with one exception:
80. All of the listed hereditary deficiencies can lead to hypoglycemia, with one exception:
81. All of the listed metabolic changes occur in the setting of chronic complications from diabetes, with one exception:
82. All of the metabolic disorders listed contribute to the onset of ketonemia in type 1 diabetes, with one exception:
83. All the changes listed are diagnostic criteria for diabetes, with one exception: (according to ADA – American Diabetes Association, 2024):
84. All the clinical manifestations and laboratory changes listed are specific to diabetic ketoacidosis (ketoacidosis coma), with one exception:
85. Glycated hemoglobin is used as a diagnostic criterion for diabetes, except:
86. Indicate the changes in lipid metabolism in insulin deficiency:
87. Indicate the changes in protein metabolism in insulin deficiency:
88. Indicate the hydro-electrolytic disturbances specific to ketoacidotic coma:
89. Insulin and C-peptide dosing are useful for all of the listed clinical conditions, with one exception:
90. Select causes of insulin resistance:
91. Select clinical manifestations and laboratory changes specific to hypoglycemia (hypoglycemic coma):
92. Select clinical manifestations and laboratory changes specific to hyperosmolar hyperglycemic syndrome (hyperosmolar coma):
93. Select laboratory tests used for screening of diabetes mellitus:
94. Select the "typical triad" of metabolic changes characteristic of diabetic ketoacidosis:
95. Select the acid-base disturbances characteristic of diabetic ketoacidosis:
96. Select the biochemical parameter that is useful for assessing compensation and treatment effectiveness of patients with diabetes:
97. Select the characteristic metabolic changes for hyperosmolar hyperglycemic syndrome:
98. Select the correct statements regarding hormonal regulation of blood glucose:
99. Select the correct statements regarding the metabolic effects of insulin:
100. Select the correct statements regarding the regulation of glucose-stimulated insulin secretion:
101. Select the correct statements regarding the regulation of glucose-stimulated insulin

secretion:

102. Select the diagnostic criteria of diabetes (according to ADA – American Diabetes Association, 2024):
103. Select the diagnostic criteria of gestational diabetes (according to ADA – American Diabetes Association, 2024):
104. Select the diagnostic criteria of impaired glucose tolerance (according to ADA – American Diabetes Association, 2024):
105. Select the diagnostic criteria of modified basal blood glucose (according to ADA – American Diabetes Association, 2024):
106. Select the diagnostic criteria of prediabetes (according to ADA – American Diabetes Association, 2024):
107. Select the insulin-dependent glucose transporter:
108. Select the lipid profile changes that make up the "atherogenic diabetic triad":
109. Select the metabolic effects of insulin:
110. Select the pair of glucose transporters that participate in the absorption of glucose from the intestine:
111. Select the pair of glucose transporters that participate in glucose reabsorption in the kidney:
112. Select the pathogenic factors involved in the occurrence of type 2 diabetes:
113. Select the pathogenic factors involved in the occurrence of type 1 diabetes:
114. Select the possible causes of hypoglycemia:
115. Select the possible causes of type 1 diabetes mellitus:
116. Select the possible causes of type 2 diabetes mellitus:
117. State the changes in carbohydrate metabolism in insulin deficiency:
118. What are the advantages of determining glycated hemoglobin over blood glucose testing?
119. What is the diagnostic value of albuminuria in patients with diabetes?
120. An increase in the activity of the following serum enzymes was detected in a patient with retrosternal pain and in the upper part of the abdomen: CK (creatine kinase) > ASAT (aspartate aminotransferase) > ALAT (alanine aminotransferase). What is the presumptive diagnosis?
121. An increase in the activity of the following serum enzymes was detected in a patient with retrosternal pain and in the upper part of the abdomen: lipase > amylase. What is the presumptive diagnosis?
122. An increase in the activity of the following serum enzymes was detected in a patient with an episode of abdominal pain: ALAT (alanine aminotransferase) > ɣ-GT (ɣ-glutamyl transferase) > ASAT (aspartate aminotransferase). What is the presumptive diagnosis?
123. Enzyme that indicates the damage of liver mitochondria - select the correct answer:
124. In what cases does ASAT (aspartate aminotransferase) activity increase in the serum?
125. LDH (lactate dehydrogenase) activity is increased in the following conditions:

126. Select blood excretory enzymes:
127. Select blood secretory enzymes:
128. Select enzymes indicators of cellular damage:
129. Select the cause of absolute hypoproteinemia:
130. Select the cause of relative hyperproteinemia:
131. Select the characteristic protein pattern for liver cirrhosis:
132. Select the conditions accompanied by an increase in the activity of ɣ-glutamyl transferase (ɣ-GT):
133. Select the correct statement regarding the absorption of iron:
134. Select the correct statements regarding hepcidin:
135. Select the correct statements regarding α-amylase:
136. Select the enzyme whose activity determination is appropriate in the case of suspected alcoholic liver damage:
137. Select the enzyme whose activity increases 4-8 hours after acute myocardial infarction?
138. Select the enzyme whose serum activity increases 4-8 hours after acute myocardial infarction:
139. Select the enzymes whose serum activity increases in cardiomyocyte injury:
140. Select the indicatory enzyme:
141. Select the negative acute phase proteins:
142. Select the pathology accompanied by a low level of plasma ceruloplasmin:
143. Select the plasma marker that remain increased more than 24 hours after acute myocardial infarction:
144. Select the positive acute-phase proteins:
145. Select the role of C-reactive protein:
146. The following plasma components are bound and transported by albumins:
147. The highest activity of ALAT (alanine aminotransferase) is detected in the cells of the:
148. Which of the following proteins is an acute phase protein?
149. Elevations in CK, AST, and LDH are significant in the diagnosis of which pathological condition?
150. In which condition is the presence of Bence-Jones proteins in urine most frequently recorded?
151. In which medical condition is the level of alkaline phosphatase (ALP) NOT significantly altered?
152. In which medical condition is the measurement of total plasma proteins indicated?
153. Select the conditions that can be accompanied by an increase in serum lipase activity:
154. Select the role of plasma haptoglobin:
155. To which class do coagulation factors belong in the context of serum enzyme classification?
156. Under what conditions can the serum activity of ASAT (Aspartate aminotransferase)

increase?

157. What are the characteristics associated with nephrotic syndrome?
158. What are the indications for measuring total plasma proteins?
159. What characterizes excreto-secretory enzymes?
160. What does a low albumin concentration in the blood indicate?
161. What does an elevated C-reactive protein (CRP) level indicate?
162. What does an elevated level of fibrinogen in blood plasma indicate?
163. What factor primarily determines the release of intracellular enzymes into circulation under pathological conditions?
164. What factors can influence the level of alkaline phosphatase in serum?
165. What factors contribute to plasma enzymes disbalance?
166. What factors influence the plasma protein levels?
167. What functions do plasma proteins have?
168. What is C-reactive protein in the context of a blood test?
169. What is the function of ceruloplasmin?
170. What is the primary function of albumin in blood plasma?
171. What role do excreto-secretory enzymes play in the human body?
172. What role do globulins play in the blood?
173. What type of enzyme is ASAT (Aspartate aminotransferase)?
174. Which enzyme contributes to an elevated DeRitis ratio in alcoholic hepatitis?
175. Which enzyme is most commonly explored as an indicator of hepatic cytolysis?
176. Which enzyme ratio is typically elevated in alcoholic hepatitis?
177. Which factors influence the release of enzymes into the serum?
178. Which of the following conditions is associated with an increase in alkaline phosphatase activity due to osteoblastic reactions?
179. Which of the following conditions is specifically associated with a significant increase in serum lipase activity?
180. Which of the following enzymes are classified as excreto-secretory enzymes?
181. Which of the following enzymes are classified as secretory enzymes?
182. Which of the following enzymes is NOT a marker of liver damage?
183. Which of the following enzymes serves as an indicator of muscle injury?
184. Which of the following statements are correct about CK-MM (creatine kinase-MM)?
185. Which plasma protein fraction is most frequently elevated in autoimmune diseases?
186. Which serum enzyme is specifically elevated in biliary obstruction?
187. Select risk factors for osteoporosis:
188. Select the alkaline phosphatase isoenzymes:
189. Select the changes of laboratory indices in blood serum specific for bone metastases:
190. Select the changes of laboratory indices in the blood serum that are specific for

osteoporosis:

191. Select the changes of serum laboratory indices that are specific for osteomalacia:
192. Select the compound which is synthesised in kidneys and regulates the active transport of Ca in intestine:
193. Select the condition in which hypercalcemia occurs:
194. Select the condition in which hypocalcemia occurs:
195. Select the conditions that are NOT characterized by hypocalcemia and hypophosphatemia:
196. Select the correct statements regarding calcitonin:
197. Select the correct statements regarding calcitriol –1,25(OH)2D3:
198. Select the correct statements regarding collagen cross-links compounds - pyridinoline (PID) and deoxypyridinoline (DPID):
199. Select the disease in which the acid phosphatase activity in the blood serum increases:
200. Select the diseases in which the acid phosphatase activity in the blood serum increases:
201. Select the disorders found in hyperparathyroidism:
202. Select the factors that lead to osteoporosis
203. Select the laboratory indices, which represent biochemical markers of bone formation:
204. Select the laboratory indices, which represent biochemical markers of bone resorption:
205. Serum alkaline phosphatase activity increases in all diseases, EXCEPT:
206. The increase of which enzyme activity in the blood serum denotes the intensification of bone resorption?
207. The increase of which enzyme activity in the blood serum denotes the intensification of bone formation?
208. What is the origin of tartrate-resistant acid phosphatase:
209. Select the bone cells:
210. Select the cells that are involved in both bone formation and resorption:
211. Select the correct sequence of stages of bone remodeling:
212. Select the correct statements with reference to blood calcium:
213. Select the correct statements with reference to collagen:
214. Select the microelements of bone tissue:
215. Select the organic acids, which are found in significant quantities in bone tissue:
216. Select the statements that characterize the structural pecullarities of collagen:
217. What structural pecullarities are characteristic of collagen:
218. What structural pecullarities are specific to collagen:
219. Which marker is NOT a biochemical marker of bone formation?
220. Which marker is NOT a biochemical marker of bone resorption:
221. Which organs can replace gonadal functions in the postmenopausal period:
222. Which statements characterize changes in plasma calcium concentration:

223. Choose the drug that irreversibly inhibits cyclooxygenase-1 (COX-1):
224. Choose the medicine that inhibits the binding of ADP to its platelet receptor:
225. Choose the process by which clot formation is activated following contact with the glass:
226. Select coagulation factors assessed by Activated partial thromboplastin time (aPPT):
227. Select fibrinolysis activators:
228. Select fibrinolysis inhibitors:
229. Select stages of the platelet phase:
230. Select the anticoagulants:
231. Select the coagulation factors that influence prothrombin time:
232. Select the coagulation factors that require vitamin K for synthesis:
233. Select the coagulation factors, the amount of which changes when warfarin is administered:
234. Select the correct statements regarding anticoagulant protein C:
235. Select the drugs that are increasing the bleeding time:
236. Select the essential substance in fibrinolysis:
237. Select the factor that activates the extrinsic pathway of coagulation:
238. Select the factor with anticoagulant role:
239. Select the factors of the intrinsic pathway of coagulation:
240. Select the factors which have anticoagulant role:
241. Select the factors with anticoagulant role:
242. Select the fibrinolysis products:
243. Select the pathologies in which the bleeding time is increased:
244. Select the process by which tissue thromboplastin activates factor VII:
245. Select the products of fibrinolysis:
246. Select the reference values of the activated partial thromboplastin time (TTPA):
247. Select the situations in which D-dimers will be elevated:
248. Select the situations when serum fibrinogen is elevated:
249. Select the stages of primary hemostasis:
250. Select the substances that are physiological inhibitors of primary hemostasis:
251. Select the time required for the extrinsic pathway:
252. Select thrombin-activated coagulation factors:
253. Select tissue thromboplastin-activated factor:
254. Select which coagulation factor is deficient if the Activated partial thromboplastin time (aPPT) is prolonged, but the prothrombin time is within the normal range:
255. Select which of the following cells are involved in hemostasis:
256. Which of the following laboratory tests gives us information similar to "Coagulation time (Lee-White)":

257. Which of the listed laboratory tests evaluates the extrinsic and common pathway of coagulation?
258. Which of the listed laboratory tests evaluates the intrinsic and common pathway of coagulation?
259. Which of the listed laboratory tests is useful in monitoring heparin therapy:
260. Choose the drug that inhibits the binding of ADP to its platelet receptor:
261. Select anticoagulant factors:
262. Select antithrombotic factors of vascular endothelium:
263. Select normal values for activated partial thromboplastin time (APTT):
264. Select prothrombotic factors of vascular endothelium:
265. Select the activators of fibrinolysis:
266. Select the correct statements about protein C (anticoagulant):
267. Select the correct statements regarding the role of thrombin:
268. Select the correct statements regarding the von Willebrand factor (vWF):
269. Select the factor that initiates the extrinsic coagulation pathway:
270. Select the factors involved in the coagulation phase of activation via the contact:
271. Select the situations in which D-dimers will be elevated:
272. Select thrombin-activated clotting factors:
273. Select tissue thromboplastin-activated factor:
274. Select which clotting factor is deficient if the activated partial thromboplastin time (APTT) is elongated but the prothrombin time is within the norm:
275. Which of the listed laboratory tests assesses the extrinsic and common pathway of coagulation:
276. Two (2) hours after surgery, the patient with complaints of pain was given morphine sulfate intravenously. The patient has a respiratory rate of 7/min, shallow breathing and does not respond adequately to stimuli. The laboratory results are: pH = 7.15 (low); C02 = 68 mmHg (increased); HC03 = 22 mEq/L (normal); What can be the causes of the imbalance?
277. A patient complaining of pain after surgery was given morphine sulfate intravenously. The patient has a respiratory rate of 7/min, shallow breathing and does not respond adequately to stimuli. The laboratory results are: pH = 7.15 (low); C02 = 68 mmHg (high); HC03 = 22 mEq/L (normal) Choose the correct diagnosis:
278. Analyze the following serum profile and select the most likely imbalance: Na+ - 141 (reference value 141); Cl— - 103 (RV -103); HCO3— - 16 (RV – 26); anionic gap – 22 (RV – 12); HCO3 variation – 10 (RV- 0); anionic gap variation – 10 (RV - 0); Cl variation – 0 (RV – 0).
279. Analyze the following serum profile and select the most likely imbalance: Na+ — 141 (Reference values - 141 mEq); Cl— — 113 (RV - 103 mEq); HCO3- — 16 (RV — 26 mEq); anionic gap — 12 (RV — 12); HCO3- variation — 10 (RV — 0); anionic gap variation — 0 (RV — 0); Cl variation — 10 (RV — 10)
280. Analyze the following serum profile and select the most likely imbalance: Na+ - 141

(reference value 141); Cl— - 113 (RV -103); HCO3— - 6 (RV – 26); anionic gap – 22 (RV – 12); HCO3 variation – 20 (RV- 0); anionic gap variation – 1o (RV - 0); Cl variation – 10 (RV – 0).

281. Analyze the following serum profile and select the most likely imbalance: Na+ - 141 (reference value 141); Cl— - 103 (RV -103); HCO3— - 11 (RV – 26); anionic gap – 27 (RV – 12); HCO3 variation – 15 (RV- 0); anionic gap variation – 15 (RV - 0); Cl variation – 0 (RV – 0).
282. Analyze the following serum profile and select the most likely imbalance: pH – 7,30 (Reference values - 7,35–7,45); PCO2 – 50 (RV - 35–45 mm Hg); [HCO3-] – 31 (RV – 22–29 mEq / L)
283. Analyze the following serum profile and select the most likely imbalance: pH – 7,25 (Reference values - 7,35–7,45); PCO2 – 50 (RV – 35–45 mm Hg); [HCO3-] – 22 (RV - 22–29 mEq/)
284. Damage to which portion of the nephron will cause altered erythrocytes to appear in the urine?
285. In which pathological states can be detected proteinuria of 0.3-1.0g/24 hours?
286. Proteinuria >3g/24 hours has extensive metabolic consequences. Select the consequences of non-selective macroproteinuria:
287. Renal mechanisms of urine concentration and dilution depend on the following factors:
288. Select buffer systems that work both in plasma and in the erythrocytes:
289. Select causes of ketonuria:
290. Select kidney functions:
291. Select laboratory investigations used to explore renal tubular function:
292. Select tests used to explore renal glomerular function:
293. Select the amount of endogenous substances that can be used to calculate glomerular filtration rate:
294. Select the amount of exogenous substance that can be used to calculate glomerular filtration rate:
295. Select the buffer system that works only in erythrocytes:
296. Select the buffer system that works only in plasma:
297. Select the cause of metabolic acidosis:
298. Select the cause of metabolic alkalosis:
299. Select the cause of respiratory acidosis:
300. Select the cause of respiratory alkalosis:
301. Select the correct statement about countercurrent multiplication:
302. Select the correct statement about isosthenuria:
303. Select the correct statement regarding the functions of the nephron:
304. Select the correct statement regarding the metabolic processes in kidney cells:
305. Select the correct statements regarding the density of urine:
306. Select the correct statements regarding urinary pH:

307. Select the diseases that can cause nephrotic syndrome:
308. Select the impact of chronic renal failure on other systems and processes in the body:
309. Select the kidney morphofunctional unit:
310. Select the mechanisms of renal blood flow regulation:
311. Select the mechanisms of urine formation:
312. Select the metabolic pathways active in kidneys:
313. Select the possible causes of the pyuria:
314. Select the proteins that can be detected in the urine in selective proteinuria:
315. Select the range for the renal glucose clearance threshold:
316. Select the system that participates in maintaining the physiological pH of the blood:
317. The presence of which amino acid determines the buffering capacity of hemoglobin?
318. The presence of which amino acids determines the buffering capacity of plasma proteins?
319. What are the causes of transient glucosuria?
320. What can be the metabolic consequences of the gradual decline in kidney function and progression to chronic kidney disease?
321. What does the increase in diuresis volume above 2.5 L/24 h indicate:
322. What factors determine the dynamics of glomerular filtration in the normal conditions (125 mL/min)?
323. What pathological condition can be accompanied by metabolic acidosis?
324. What pathological condition can be accompanied by respiratory acidosis?
325. Which biochemical parameter is used to define and stratify the risk of chronic kidney disease according to KDIGO 2012 Kidney Disease Improving Global Outcomes)
326. Which biologically active compounds are synthesized in the kidney?
327. Which hormones are directly involved in the regulation of the kidney functions?
328. Which hormones can be catabolized in the kidney tissue?
329. Which indicators stratify the risk and occurrence of acute renal failure according to the RIFLE criteria (risk, injury, insufficiency, loss of kidney function and end-stage renal disease):
330. Which processes justify the high consumption of O2 by the renal tissue:
331. How is acid-base balance maintained?
332. Select the acid-base imbalance and the corresponding compensatory response:
333. Select the cause of metabolic acidosis with a normal anion gap:
334. Select the causes of metabolic acidosis with an increased anion gap:
335. Select the correct statements regarding the phosphate buffer system:
336. Select the metabolic acidosis caused by increased H+ production:
337. Select the possible secondary/compensatory response in acid-base imbalances:
338. Select the primary deviation in acid-base imbalances:
339. Select the secondary/compensatory deviation in acid-base imbalances:

340. What are the compensatory responses in acid-base imbalances?
341. What does the presence of amino acids in urine indicate?
342. What does the presence of homogentisic acid in urine indicate?
343. Which of the following situations confirms the presence of **nephritic** syndrome?
344. Which of the following situations confirms the presence of **nephrotic** syndrome?
345. Which of the following situations confirms the presence of nephrotic syndrome?
346. Which of the following situations confirms the presence of renal injury?
347. Which of the following situations does not confirm the presence of renal injury?
348. Which of the listed factors does NOT influence the affinity of hemoglobin for oxygen?
349. Although apoB indirectly reflects the concentration of LDL, there are situations when the concentration of apoB is increased and LDL-Chol values are normal. What information does the disproportionate increase in apoB concentration provide?
350. Calculation of the concentration of LDL-cholesterol is carried out according to the Friedewald formula. Select the situations when the Friedewald formula is not valid for calculating LDL-cholesterol:
351. HDL have an antiatherogenic role through the following effects, with one exception:
352. Oxidized LDL is involved in atherogenesis through the following effects, with one exception:
353. Regarding isolated hypertriglyceridemia, the statements are correct:
354. Regarding the deficiency of the enzyme LCAT (lecithincholesterol acyl transferase) following statement is correct:
355. Select atherogenic lipoproteins:
356. Select the biochemical mechanisms involved in the development of diabetic dyslipidemia (type II diabetes):
357. Select the changes of lipid profile characteristic of familial hyperchylomicronemia (HLP type I):
358. Select the changes that are part of the "atherogenic lipid profile":
359. Select the clinical conditions and laboratory changes that fall within the IDF (International Diabetes Federations. 2005) criteria for defining the metabolic syndrome:
360. Select the correct answers regarding combined hyperlipidemia:
361. Select the correct answers regarding familial a-beta-lipoproteinemia:
362. Select the correct answers regarding familial an-alpha-lipoproteinemia (Tangier disease):
363. Select the correct statements about lipoprotein(a):
364. Select the correct statements regarding dyslipidemia from hypothyroidism:
365. Select the correct statements regarding sitosterolemia:
366. Select the diseases associated with hypercholesterolemia:
367. Select the dyslipidemia accompanied by the formation of pathological β-VLDL lipoproteins:

368. Select the enzyme associated with HDL that contributes to the function of retrotransport of cholesterol by these lipoproteins:
369. Select the enzyme that breaks down the largest amount of triglycerides in chylomicrons and VLDL:
370. Select the enzyme that ensures the storage of excess cholesterol in tissues:
371. Select the factors that can contribute to the increase in plasma cholesterol concentration:
372. Select the factors that can contribute to the increase in the plasma concentration of triglycerides:
373. Select the hereditary defects associated with familial hypercholesterolemia:
374. Select the lipid changes that fall within the defining criteria of the metabolic syndrome (according to IDF – International Diabetes Federations, 2005):
375. Select the lipid profile changes characteristic of familial hypercholesterolemia:
376. Select the lipid profile changes that are specific for the "diabetic triad":
377. Select the main cause of the formation of pathological lipoproteins X:
378. Select the main function of apolipoprotein A-I:
379. Select the main function of apolipoprotein B-100:
380. Select the main function of apolipoprotein C-II:
381. Select the main function of HDL:
382. Select the main function of LDL:
383. Select the main mechanism of action of statins:
384. Select the most common causes of familial hyperchylomicronemia (HLP type I):
385. Select the regulatory effects of cholesterol delivered to cells via LDL-receptors:
386. Select the screening tests used to determine whether a patient has or not a disorder of lipid metabolism:
387. Select the site of chylomicron synthesis:
388. Select the site of VLDL synthesis:
389. Select the special tests used to confirm and/or establish the type of primary dyslipidemia:
390. Regarding dyslipidaemia in chronic alcoholism the statements are correct:
391. Regarding the composition and role of chylomicrons, the statements are correct:
392. Regarding the composition and role of HDL, the statements are correct:
393. Regarding the composition and role of LDL, the statement is correct:
394. Regarding the composition and role of VLDL, the statements are correct:
395. Regarding the enzymes involved in lipoprotein and cholesterol metabolism, the statements are correct:
396. Regarding the mechanisms of action of fibrates, the statements are correct:
397. Regarding the mechanisms of action of nicotinic acid and its derivatives, the statements are correct:

398. Select the causes and characteristic laboratory changes for hyperlipidaemia in chronic renal failure:
399. Select the causes of hypercholesterolemia in nephrotic syndrome:
400. Select the clinical conditions and laboratory changes characteristic for hereditary hyper-alpha-lipoproteinemia:
401. Select the correct statements about lipoprotein lipase (LPL):
402. Select the correct statements regarding lecithincholesterol acyl transferase (LCAT):
403. Select the possible causes of hereditary hyper-alpha-lipoproteinemia:
404. The apoprotein B assay reflects the content of all lipoproteins mentioned, with one exception:
405. Select the main mechanism of action of resins (bile acid sequestrants):
406. Interpret the following thyroid function test: TSH — 0.1 (Reference value — 0.4–4.1 mIU/L); Free T4 — 15.6 (RV – 9.0-22.0 pmol/L); Free T3 — 7.2 (RV — 3.0–9.0 pmol/L)
407. Interpret the following thyroid function test: TSH — 6.7 (Reference value — 0.4–4.1 mIU/L); Free T4 — 28.0 (RV – 9.0-22.0 pmol/L); Free T3 — 8.6 (RV — 3.0–9.0 pmol/L)
408. Interpret the following thyroid function test: TSH — 8.4 (Reference value — 0.4–4.1 mIU/L); Free T4 — 14.0 (RV – 9.0-22.0 pmol/L); Free T3 — 7.6 (RV — 3.0–9.0 pmol/L
409. Interpret the following thyroid function test: TSH — <0.003 (Reference value — 0.4–4.1 mIU/L); Free T4 — 27.5 (RV – 9.0-22.0 pmol/L); Free T3 — 14.7 (RV — 3.0–9.0 pmol/L)
410. How do glucocorticoids influence thyroid function?
411. How do thyroid hormones influence mitochondrial activity? (Select all correct answers)
412. Regarding rT3 (reverse triiodothyronine), the correct statement is:
413. Regarding the levels of thyroid hormones in plasma, the following statements are correct:
414. Regarding the mechanisms of action of thyroid hormones, the correct statements are:
415. Regarding the regulation of thyroid hormone synthesis and secretion, the following statements are correct:
416. Regarding thyroglobulin, the following statements are correct:
417. Select the autoimmune markers of the thyroid gland:
418. Select the biologically active form of thyroid hormones:
419. Select the changes in plasma concentration of thyroid hormones characteristic in the case of thyroid hormone resistance:
420. Select the changes in thyroid parameters characteristic for low T3 syndrome:
421. Select the factors that can lead to decreased TBG (thyroxine-binding globulin) levels:
422. Select the factors that can lead to increased TBG (thyroxine-binding globulin) levels:
423. Select the laboratory parameters used for thyroid pathology screening:
424. Select the main plasma protein that binds and transports T3:
425. Select the non-thyroidal factors that can lead to decreased TSH levels:
426. Select the non-thyroidal factors that can lead to increased TSH levels:
427. Select the plasma proteins that bind and transport T4:

428. Select the possible causes of low T3 syndrome:
429. Select the possible causes of thyroid hormone resistance:
430. Select the processes catalyzed by TPO (thyroid peroxidase):
431. Select the processes stimulated by TSH at the level of thyroid gland:
432. Select the thyroid proteins and enzymes activated and/or induced by TSH:
433. What are the effects of thyroid hormones on lipid metabolism? (Select all correct answers)
434. What are the main causes of primary hypothyroidism?
435. What changes in thyroid function tests are observed during pregnancy? (Select all correct answers)
436. What effect does a high level of plasma iodine have on the thyroid gland?
437. What effect does iodine deficiency have on the NIS pump (sodium-iodide symporter)?
438. What is necessary for the adequate synthesis of thyroid hormones?
439. What is the fate of MIT and DIT after the cleavage of Tg (thyroglobulin)?
440. What is the main role of thyroid hormones on metabolism?
441. What is the mechanism by which lithium affects thyroid function?
442. What is the primary (initial) hormonal change in primary hyperthyroidism?
443. What is the primary (initial) hormonal change in primary hypothyroidism?
444. What is the primary (initial) hormonal change in secondary hyperthyroidism?
445. What is the primary (initial) hormonal change in secondary hypothyroidism?
446. What is the primary (initial) hormonal change in tertiary hypothyroidism?
447. What processes influence the activity of NIS (sodium-iodide symporter)? (Select all correct answers)
448. What role do thyroid hormones play in regulating gastrointestinal (GI) functions?
449. Which of the following are functions of thyroid hormones? (Select all correct answers)
450. Which of the following factors can influence thyroid function tests?
451. Which of the following factors interferes with iodine absorption through NIS (sodium-iodide symporter)?
452. Which of the following steps are involved in the biosynthesis of T4? (Select all correct answers)
453. Deficiency or absence of which enzymes causes congenital adrenal hyperplasia?
454. Identify the regulatory mechanisms and factors that influence the corticosteroid secretion:
455. In what phases of the menstrual cycle does estrogen rise to the maximum possible level?
456. Select changes of the blood indices that are suggestive for chronic secretion deficiency of adrenal cortex hormones:
457. Select conditions and pathologies associated with increased transcortin levels (CBG):
458. Select dynamic tests used in the diagnosis of primary adrenal insufficiency (Addison's

disease):

459. Select dynamic tests used in the differential diagnosis between ACTH-dependent and ACTH-independent syndromes:
460. Select laboratory changes specific to primary hyperaldosteronism:
461. Select metabolic effects of glucocorticosteroids:
462. Select pituitary hormone that regulates the peripheral synthesis of corticosteroid hormones:
463. Select pituitary hormones that stimulate testosterone synthesis in peripheral tissues:
464. Select steroid hormone that can be transported by transcortin (CBG - corticosteroid-binding globulin):
465. Select the change that is characteristic for chronic secretory deficiency of adrenal cortex hormones:
466. Select the clinical manifestation characteristic of primary hyperaldosteronism (Conn's syndrome):
467. Select the coenzyme of 5-alpha-reductase, the enzyme that converts testosterone to dihydrotestosterone in peripheral tissues:
468. Select the conditions and diseases that lead to the inhibition of the synthesis of sex hormone transport protein (SHBG):
469. Select the correct statements characteristic for ACTH-independent syndrome:
470. Select the correct statements characteristic for the luteal phase of the ovarian cycle:
471. Select the correct statements characterizing the deficiency of 21-hydroxylase:
472. Select the correct statements regarding Cushing’s disease:
473. Select the correct statements regarding the effects of estradiol in the follicular phase of the ovarian cycle:
474. Select the correct statements regarding the regulation of adrenal cortex androgen synthesis and secretion:
475. Select the correct statements that are characteristic for ectopic ACTH syndrome:
476. Select the correct statements that are characteristic for hyperaldosteronism:
477. Select the correct statements that are characteristic for male hypogonadism:
478. Select the correct statements that are characteristic for primary female hypogonadism:
479. Select the correct statements that are characteristic for secondary female hypogonadism:
480. Select the correct statements that are characteristic for the luteal phase of the ovarian cycle:
481. Select the hormones secreted by the placenta:
482. Select the hormones that regulate ovarian secretion during the fertile period in women:
483. Select the main source of estrogen in the postmenopausal period:
484. Select the mineraolcorticosteroid hormone:
485. Select the most active form of endogenous androgens:
486. Select the organs and cells that can synthesize testosterone:

487. Select the periods when elevated progesterone levels are attested:
488. Select the steroid hormone synthesis common intermediary compound:
489. Select the steroid hormones that cause the appearance of secondary male sexual characteristics:
490. Select the substrate used by aromatase to synthesize estradiol:
491. Select the time of day when the level of cortisol secretion is minimal:
492. The change in which of the listed laboratory indices is suggestive in the diagnosis of Addison's disease?
493. Which blood transport proteins do androgens bind and transport?
494. Select the substrate used by aromatase for estrone synthesis:
495. Select excretory liver enzymes:
496. Select secretory liver enzymes:
497. Select the compound that is present in the bile:
498. Select the correct statement regarding alanine aminotransferase (ALAT):
499. Select the correct statement regarding alkaline phosphatase:
500. Select the correct statement regarding conjugated bilirubin:
501. Select the correct statement regarding dysproteinemia in hepatobiliary diseases:
502. Select the correct statement regarding gamma-glutamyl transferase:
503. Select the correct statement regarding pseudocholinesterase:
504. Select the correct statement regarding unconjugated bilirubin:
505. Select the correct statements regarding aspartate aminotransferase (ASAT):
506. Select the correct statements regarding dysproteinemia in hepatobiliary diseases:
507. Select the correct statements regarding hyperproteinemia in liver diseases:
508. Select the correct statements regarding hypoproteinemia in liver diseases:
509. Select the enzyme that is a marker of cholestasis:
510. Select the enzyme that is a marker of hepatocyte membrane permeability:
511. Select the enzymes that are markers of hepatocyte synthetic function:
512. Select the types of gallstones:
513. What are the causes of conjugated hyperbilirubinemia?
514. What are the causes of unconjugated hyperbilirubinemia?
515. What are the stages of gallstone formation?
516. What factors contribute to the formation of gallstones?
517. What is specific for liver steatorrhea?
518. Which change in the composition of bile will trigger gallstone formation?
519. From which substances is bilirubin formed?
520. From which substances is bilirubin formed?
521. Select organ-specific liver enzymes:
522. Select the amino acids used as conjugating agents in phase II of liver detoxification:

523. Select the amino acids used as conjugating agents in phase II of detoxification in the liver:
524. Select the changes in bile pigments and other laboratory indices specific to pre-microsomal hepatic hyperbilirubinemia:
525. Select the changes in bile pigments and other laboratory indices specific to posthepatic hyperbilirubinemia:
526. Select the changes in bile pigments and other laboratory indices specific to microsomal hepatic hyperbilirubinemia:
527. Select the changes in bile pigments and other laboratory indices specific to prehepatic hyperbilirubinemia:
528. Select the compound that transports bilirubin from the cells of the reticuloendothelial system, where it is formed, into the hepatocyte:
529. Select the compounds that are present in the bile:
530. Select the conjugating agent used in phase II of detoxification in the liver:
531. Select the enzyme that reveals hepatic enzyme induction:
532. Select the liver functions:
533. Select the mechanisms through which drugs cause liver injury:
534. Select the statement that does NOT characterize phase I (oxidation-reduction) of the detoxification mechanism in the liver:
535. Select the statements that characterize detoxification in the liver:
536. Select the statements that characterize phase I (oxidation-reduction) of the detoxification mechanism in the liver:
537. Select the types of steatorrhea:
538. What are liver functions in carbohydrate metabolism?
539. What are the causes of physiological jaundice in newborns?
540. What are the functions of the bile?
541. What is specific for liver steatorrhea?
542. What is the incipient process of gallstone formation?
543. What is the liver function in protein metabolism?
544. Which statements are correct regarding bilirubin neurotoxicity?