**Questions for final exam, SIMU test (2024-2025)**

1. What pathological process is provoked by endogenous cause?
2. What effects exert favorable conditions for the body?
3. What effects exert unfavorable conditions for the body?
4. What exogenous conditions could influence the action of harmful agents?
5. What is the role of the cause in disease appearance?
6. What is the role of conditions in the disease appearance
7. What is pathogenetic factor in pathological processes?
8. What is the pathogenetic chain in pathological processes?
9. What is the main link of pathogenesis?
10. What is the characteristic for body’s physiologic reaction
11. What is the characteristic for body’s physiologic reaction?
12. What is the characteristic for body’s pathologic reaction?
13. What are features of body’s pathologic reaction?
14. What reaction could be considered as compensatory?
15. What reaction could be considered as compensatory?
16. What reaction could be considered as protective?
17. What is adaptive reaction?
18. What is compensatory reaction?
19. What is protective reaction?
20. What is reparative reaction?
21. What is the pathological process?
22. What is the definition of cell injury?
23. What is the definition of cellular pathologic process?
24. What does represent “point of no return“ in the course of cell injury?
25. What does represent “point of no return“ in the course of cell injury?
26. What intracellular electrolytic dyshomeostasis is found in cells which started necrosis?
27. What is the pathogenetic role of intracellular sodium dyshomeostasis in development of cell necrosis?
28. What is the pathogenetic role of intracellular potassium dyshomeostasis in development of cell necrosis?
29. What is the pathogenetic role of intracellular calcium dyshomeostasis in development of cell necrosis?
30. What is the pathogenetic role of mitochondrial damage in development of cellular pathological processes?
31. What is the pathogenetic role of mitochondrial damage in development of cellular pathological processes?
32. What is the pathogenetic role of mitochondrial damage in development of cellular pathological processes?
33. What are the characteristics of apoptosis?
34. What are the characteristics of apoptosis?
35. What are the characteristics of necrosis?
36. What are the characteristics of necrosis?
37. What are the characteristics of necrosis?
38. What is the pathogeny of hypoxic cell injury?
39. What is the pathogeny of hypoxic cell injury?
40. What is the pathogenetic role of reactive oxygen species (ROS) in development of cell necrosis?
41. What is the pathogenetic role of reactive oxygen species (ROS) in development of cell necrosis?
42. What is the medical definition of the general changes in the body which accompanies necrosis of tissues?
43. What proteins are elevated in the blood in acute phase-response?
44. What are the important pathogenetic factors for the initiation of intrinsic pathway of apoptosis?
45. What are the important pathogenetic factors for the initiation of extrinsic pathway of apoptosis?
46. What are the features of apoptosis?
47. What are the features of apoptosis?
48. What is the mechanism of apoptosis initiated by DNA damage?
49. What are the pathophysiologic mechanisms of defective apoptosis?
50. What are the pathophysiologic factors of reduced apoptosis?
51. What disorders are related with reduced apoptosis?
52. What disorders are related with increased apoptosis?
53. What disorders are related with increased apoptosis?
54. What are the general factors of acquired dystrophies?
55. What is the main pathogenetic link in pathophysiological mechanism of fatty liver?
56. What are the main pathogenetical mechanisms of fatty liver?
57. What are the main pathogenetical mechanisms of fatty liver?
58. What is one of the pathogenetical mechanisms in development of fatty liver in case of starvation?
59. What are the main pathogenetical mechanisms of fatty liver in malnutrition?
60. What is the main pathogenetic link of cell dystrophy in condition of ATP depletion?
61. What is the pathogenetic mechanism characteristic for glycogen storage disease?
62. What is the pathogenetic mechanism characteristic for cell dystrophy under action of ROS (reactive oxygen species)?
63. Which regeneration is considered as homeostatic?
64. Which physiological regeneration is considered as reparative?
65. Which physiological regeneration is considered as adaptive?
66. What does the metaplasia mean?
67. 67.What does the sclerosis mean?
68. What does the hyperplasia mean?
69. What does the hypertrophy mean?
70. What does atrophy mean?
71. What types of the atrophy are considered as physiological?
72. What factor induces sclerosis?
73. What factor induces sclerosis?
74. What factor induces sclerosis?
75. What are the consequences of sclerosis?
76. What is the most common type of epithelial metaplasia?
77. How is explained the mechanisms of atrophy?
78. What kind of stimuli activate ubiquitin ligases leading to atrophy?
79. What is the relationship between influx and reflux of blood in arterial hyperemia?
80. What is the pathogenetic mechanism of neurotonic arterial hyperemia?
81. What is the pathogenetic mechanism of neuroparalitic arterial hyperemia?
82. What is the pathogenetic mechanism of neuromyoparalytic arterial hyperemia?
83. What is the pathogenetic mechanism of functional arterial hyperemia?
84. What is characteristic arterial hyperemia?
85. What is characteristic arterial hyperemia?
86. What are the external manifestations of venous hyperemia?
87. What is the cause of increased organ volume in venous hyperemia?
88. What is the cause of decreased local temperature in venous hyperemia?
89. What are the local pathogenetic mechanisms of ischemia?
90. What hemodynamic changes are characteristic for the ischemia?
91. What emboli are endogenous?
92. What embolus is exogenous?
93. Which vessels damage lead to air embolism?
94. What factors disturb rheological properties of the blood?
95. What does represent edema?
96. What is the main pathogenetic mechanism of edema development in nephritic syndrome?
97. What are the pathogenetic mechanisms of edema in liver failure?
98. What is one pathogenetic mechanism of edema in heart failure?
99. What is one pathogenetic mechanism of hepatic edema?
100. What is the first vascular reaction to injury?
101. What does represent paradoxical embolism?
102. What is the pathogenetic role of endothelial cell injury in development of white
103. thrombus (primary thrombus)?
104. What is the pathogenetic role of endothelial cell injury in development of white thrombus
105. (primary thrombus)?
106. What pathogenetic factors contribute to activation and adhesion of thrombocytes in
107. thrombosis?
108. What pathogenetic factors contribute to activation and adhesion of thrombocytes in
109. thrombosis?
110. What pathogenetic factor contributes to activation and adhesion of thrombocytes in
111. thrombosis?
112. Which are pathogenetic factors that contribute to development of thrombosis?
113. What pathogenetic factor contributes to development of thrombosis?
114. What are the biological characteristics of acute inflammation?
115. What is one of biological characteristics of acute inflammation?
116. What are the biological characteristics of chronic inflammation?
117. What is one of biological characteristics of chronic inflammation?
118. What is the pathogenic chain for cytokines production in acute inflammation triggered by cell necrosis in hypoxia?
119. What is the pathogenic chain for cytokines production in acute inflammation triggered by biological factors (bacteria, fungi)?
120. What does involve the inflammasome concept?
121. What biological products can be DAMP (damage associated molecular pattern)?
122. What biological products can be PAMP (pathogen associated molecular pattern)?
123. What are the biological effects of anti-inflammatory interleukins?
124. What are the biological effects of pro-inflammatory interleukins (IL-1, IL-6)?
125. What is one of biological effect of pro-inflammatory interleukins (IL-1, IL-6)?
126. What immune cells secrete pro-inflammatory interleukins (IL-1, IL-6)?
127. What immune cells secrete anti-inflammatory interleukins?
128. What is the pathogeny for enhanced synthesis of acute-phase proteins in acute inflammation triggered by a biological flogogenic factor (bacteria, fungi)?
129. What is the pathogeny for enhanced synthesis of acute-phase proteins in acute inflammation triggered by cell necrosis in hypoxia?
130. What is the role of C reactive protein in pathogeny of acute inflammation?
131. What is the role of fibrinogen in pathogeny of acute inflammation?
132. What is the role of serum amyloid A in pathogeny of acute inflammation?
133. What are plasma-derived inflammatory mediators?
134. What is the role of Hageman factor in pathogeny of acute inflammation?
135. What inflammatory mediators are released in the result of activation of Hageman factor?
136. What are biological effects of anaphylatoxins in inflammatory focus?
137. What is the role of C3b fraction of the complement system in acute inflammation?
138. What is the role of C5a-C9a fraction of the complement system in acute inflammation?
139. Which blood cells mainly will migrate to the tissue in acute viral infection?
140. What is the sequence of leukocytes emigration to the focus of inflammation?
141. What are the humoral chemotactic substances that are important in emigration of leukocytes?
142. What are the cellular chemotactic substances that are important in emigration of
143. leukocytes?
144. Which factors promote adhesion and rolling of leukocytes at the endothelial level?
145. Which factors promote the firm adhesion of leukocytes to the vessel wall?
146. What is the mechanism of leukocytes rolling along vessel wall?
147. What is the mechanism of firm adhesion of leukocytes to the vessel wall?
148. What is the mechanism of firm adhesion of leukocytes to the vessel wall?
149. Which inflammatory mediators induce expression of selectins and integrins that are important for the leukocytes emigration?
150. What is the mechanism of leukocytes transmigration across the vessel wall?
151. What is the mechanism of leukocytes transmigration across the vessel wall?
152. Which types of leukocytes have ability to make phagocytosis?
153. What is the sequence of the processes during phagocytosis?
154. What are the most important opsonins that enhance the recognition processes and phagocytosis of pathogenic agents?
155. What does represent the opsonisation process?
156. What is the specific immune mechanism of attachment process during phagocytosis?
157. What are the oxygen – dependent bactericide mechanisms that destroy the pathogenic agent in phagolysosome?
158. What is one of the oxygen – dependent bactericide mechanisms that destroy the pathogenic agent in phagolysosome?
159. What are the oxygen – independent bactericide products that destroy pathogenic agents in phagolysosome?
160. What is the role of macrophages in the regenerative processes during acute inflammation?
161. What is the role of macrophages in the regenerative processes during acute inflammation?
162. What is the role of macrophages in the regenerative processes during chronic inflammation?
163. What is the mechanism of pathologic regeneration during chronic inflammation?
164. How does circulating blood volume and blood viscosity change in absolute hypernatremia? (
165. How does circulating blood volume and blood cell concentration change in absolute hypernatremia?
166. How does circulating blood volume and blood viscosity change in relative hypernatremia?
167. What pathologic processes are followed by relative hypernatremia?
168. What sodium dyshomeostasis develops in vasopressin hypersecretion?
169. What sodium dyshomeostasis develops in vasopressin hyposecretion
170. What sodium dyshomeostasis develops in mineralocorticoid hypersecretion
171. What sodium dyshomeostasis develops in mineralcorticoid hyposecretion?
172. How does intravascular volume, plasma osmolarity and cell volume change in absolute hyponatremia?
173. How does intravascular volume, plasma osmolarity and cell volume change in relative hyponatremia?
174. How does blood viscosity and blood cell concentration change in absolute hyponatremia?
175. What is the pathogenesis of sodium dyshomeostasis seen in chronic liver failure?
176. What is the pathogenesis of acid-base imbalance in hyperkalemia?
177. What is the pathogenesis of acid-base imbalance in hypokalemia?
178. What is the pathogenesis of potassium dyshomeostasis in insulin treatment?
179. What are the clinical manifestations of hypokalemia?
180. What is the pathogenesis of calcium dyshomeostasis in liver failure?
181. What is the pathogenesis of calcium dyshomeostasis in renal failure?
182. What is the pathogenesis of calcium dyshomeostasis in parathormone deficiency?
183. What is the pathogenesis of excess calcium dyshomeostasis by parathormone?
184. What are the manifestations of hypocalcemia?
185. What are the compensatory mechanisms in hypocalcemia?
186. What are the manifestations of hypercalcemia?
187. What are the compensatory reactions in hypercalcemia?
188. What is the pathogenesis of neuromuscular excitability disorders in hypercalcemia?
189. What type of water dyshomeostasis is relative hypernatremia?
190. What is dehydration?
191. What cardiovascular manifestations develop in dehydration?
192. How does blood protein concentration change in dehydration?
193. What is the pathogenesis of water dyshomeostasis in water deprivation?
194. How does blood osmolarity and cell volume change with water deprivation?
195. How does excessive sweating change blood osmolarity and cell volume?
196. How does excessive sweating change blood osmolarity and sodium levels?
197. What is the pathogenesis of water dyshomeostasis in pulmonary hyperventilation?
198. How do blood osmolarity and blood sodium levels change in pulmonary hyperventilation?
199. What electrolyte dyshomeostasis develops in hypertonic dehydration?
200. How to compensate for water dyshomeostasis in hypertonic dehydration?
201. What pathologic process is associated with isotonic dehydration?
202. What is the pathogenesis of isotonic dehydration?
203. What water dyshomeostasis develops into diarrhea?
204. What pathologic process is associated with hypotonic dehydration?
205. What is hypotonic dehydration?
206. What pathologic process is associated with hypotonic dehydration?
207. How is acidosis defined?
208. How is alkalosis defined?
209. How is respiratory acidosis defined?
210. How is metabolic acidosis defined?
211. What is the pathogenetic factor of respiratory acidosis?
212. What is the pathogenetic factor of metabolic alkalosis?
213. What is the pathogenetic factor of respiratory alkalosis?
214. How do pH and PaCO2 change in metabolic acidosis?
215. What acid-base disorder occurs in aldosterone hyposecretion?
216. What acid-base disorder is installed in aldosterone hypersecretion?
217. Accumulation of which product leads to metabolic acidosis in the absence of insulin?
218. What is the pathogenetic factor of acid-base disorders in starvation?
219. What is the pathogenesis of acid-base disturbances in hypoxia?
220. What is the pathogenetic factor of acid-base disturbances in hypoxia?
221. What is the pathogenetic factor of metabolic acidosis in hypoxia?
222. How does pH and bicarbonate change in hypoxia?
223. What is the pathogenetic factor of acid-base disturbance in diarrhea?
224. What is the pathogenetic factor of acid-base disturbance in pulmonary hypoventilation?
225. What is the pathogenetic factor of acid-base disturbances in pulmonary hyperventilation?
226. How do pH and PaCO2 change in pulmonary hypoventilation?
227. What is the mechanism of hypernatremia in acidosis?
228. What is the pathogenesis of potassium disturbances in metabolic acidosis?
229. What is the pathogenic factor of hypercalcemia in acidosis?
230. What is the pathogenesis of hypercalcemia in acidosis?
231. What are the compensatory reactions in metabolic acidosis?
232. What are the compensatory reactions in metabolic alkalosis?
233. What are the blood changes seen in metabolic acidosis?
234. What causes arterial hypotonia in acidosis?
235. How does respiratory rate (RR) and PaCO2 change in metabolic acidosis?
236. How does respiratory rate (RR) and PaCO2 change in metabolic alkalosis?
237. What is the pathogenetic factor of osteoporosis and osteomalacia in acidosis?
238. What is the pathogenetic factor of alkaloid sodium level disorder?
239. What is the pathogenetic factor of alkaloid calcium disorder?
240. What are the pathogenetic factors of hypocalcemia in alkalosis?
241. How does the dissociation of the oxyhemoglobin curve and the affinity of hemoglobin for O2 change in acidosis?
242. How the dissociation of the oxyhemoglobin curve and the affinity of hemoglobin for O2 in alkalosis change
243. What is allergy?
244. What are the conditions needed to turn a hapten into a full allergen?
245. What is one of the biological characteristics of immediate hypersensitivity?
246. What are the biological characteristics of immediate hypersensitivity?
247. What is one of the biological features of delayed hypersensitivity?
248. What are the biological features of delayed hypersensitivity?
249. What are the biological characteristics of active sensitization?
250. What is one of the biological characteristics of active sensitization?
251. What are the biological characteristics of active sensitization?
252. What are the biological characteristics of passive sensitization?
253. What are the biological characteristics of passive sensitization?
254. What are the biological characteristics of antigen-presenting cells?
255. What is one of the biological characteristics of antigen-presenting cells?
256. What is one of the biological characteristics of antigen-presenting cells?
257. Which molecules are responsible for double opsonization in cytotoxic-cytolytic reactions?
258. Which molecules are responsible for double opsonization in cytotoxic-cytolytic reactions?
259. Which molecules are responsible for double opsonization in type II allergic reactions?
260. Where do immune complexes form in type III allergic reactions? (1)
261. What are the most commonly involved organs in which the immune complex inflammatory reaction in type III allergic reactions most commonly sediments and triggers?
262. What mediators are involved in the development of the inflammatory reaction in type III allergic reactions?
263. What mediators are involved in the development of the inflammatory reaction in type III allergic reactions?
264. What is the pathogenetic role of complement activation in type III allergic reactions?
265. What is the pathogenetic role of complement activation in type III allergic reactions?
266. What is the pathogenetic role of Hageman factor activation in allergic reaction with circulating immune complexes?
267. What is the pathogenetic role of Hageman factor activation in allergic immune complex reaction?
268. What is the pathogenetic role of Hageman factor activation in allergic reaction with circulating immune complexes?
269. Which mediators with proinflammatory effects are produced following activation of Hageman factor in type III allergic reaction?
270. What is the sequence of reactions that are responsible for sensitization in delayed hypersensitivity?
271. What are effector immune cells in delayed-type hypersensitivity?
272. What are the effector immune cells in type IV hypersensitivity?
273. Which pro-inflammatory mediators are involved in the pathogenesis of delayed hypersensitivity?
274. Which pro-inflammatory mediators are involved in the pathogenesis of delayed hypersensitivity?
275. Which immune cells are responsible for cytotoxicity in delayed hypersensitivity?
276. What is the pattern of type I allergic reaction?
277. What is the pattern of type II allergic reaction?
278. What is the pattern of type III allergic reaction?
279. What is the pattern of type IV allergic reaction?
280. What is characteristic for the immunologic stage of immediate-type allergic reactions?
281. What is characteristic for the immunologic stage of immediate-type allergic reactions?
282. What is characteristic for immunologic stage I allergic reactions?
283. What is characteristic for immunologic stage I allergic reactions?
284. What are the presynthesized mediators of mast cells and basophils that are released following their degranulation in type I allergic reaction?
285. What are the presynthesized mediators of mast cells and basophils that are released following their degranulation in type I allergic reaction?
286. What is specific for the pathochemical stage of type I allergic reactions?
287. What are the effects of histamine in type I allergic reaction?
288. What are the effects of leukotrienes released by mast cells in type I allergic reaction?
289. What are the pathophysiologic mechanisms of arterial collapse in anaphylactic shock?
290. What are the pathophysiologic mechanisms of cardiovascular manifestations in anaphylactic shock?
291. What are the pathophysiologic mechanisms of the respiratory manifestations of type I allergic reaction?
292. What are the pathophysiologic mechanisms of the respiratory manifestations of type I allergic reaction?
293. How does insulin and glucagon secretion change on a high carbohydrate diet?
294. The starvation period is followed by hypoglycemia. How does insulin and glucagon secretion change?
295. How does blood glucose change in liver failure?
296. How does blood glucose change in liver failure?
297. What is the compensatory mechanism in dietary hyperglycemia?
298. What is the compensatory mechanism in dietary hyperglycemia?
299. What is the compensatory response in severe hypoglycemia following depletion of glycogen stores in the liver?
300. What is the compensatory response in severe hypoglycemia following depletion of glycogen stores in the liver?
301. What are the effects of catecholamines during carbohydrate starvation?
302. What are the consequences of persistent hyperglycemia?
303. How does water metabolism change in diabetic hyperglycemia?
304. What are the consequences of persistent hyperglycemia?
305. What is the consequence of persistent hyperglycemia?
306. What is the consequence of persistent hyperglycemia in insulin failure?
307. What are the compensatory mechanisms in hypoglycemia?
308. What are the compensatory mechanisms in hypoglycemia?
309. Which hormone inhibits glycogenolysis?
310. Which hormone activates the process of liver glycogenogenesis?
311. Which intestinal enzyme dysregulation induces carbohydrate maldigestion?
312. Quantitative changes in which intestinal enzymes induce carbohydrate maldigestion?
313. What is the consequence of carbohydrate malabsorption?
314. What causes carbohydrate malabsorption?
315. What are the metabolic consequences of hypoglycemia?
316. What is the pathophysiologic mechanism of ketogenesis in carbohydrate starvation?
317. What is the compensatory mechanism in hyperglycemia?
318. What is the compensatory mechanism in hyperglycemia?
319. What are the compensatory mechanisms in hyperglycemia?
320. What is the pathogenetic mechanism of hypoglycemia in insulinoma (pancreatic beta-cell tumor)?
321. What are the compensatory reactions in hyperglycemia?
322. What are the compensatory reactions in hyperglycemia?
323. What is the "threshold" value for reabsorption of glucose from primary urine to the renal tubular epithelium?
324. What is the role of the kidneys in carbohydrate starvation?
325. What are the manifestations of persistent hyperglycemia?
326. What are the manifestations of persistent hyperglycemia?
327. Which factors will determine the pathogenesis of diabetic ketoacidosis?
328. Which pathogenic links contribute to the development of hyperketonemia?
329. Which biochemical changes contribute to the development of hyperketonemia?
330. What is the pathogenetic mechanism of diabetic ketoacidosis?
331. What is the pathogenetic mechanism of diabetic ketoacidosis?
332. What are the adverse effects of enhancing amino acid gluconeogenesis in hypoglycemia as a compensatory response?
333. What are the adverse effects of enhancing amino acid gluconeogenesis in hypoglycemia as a compensatory response?
334. How does blood osmolarity and diuresis change in diabetic ketoacidosis?
335. How do blood glucose, osmolarity and diuresis change in diabetic ketoacidosis?
336. How do osmolarity, diuresis and circulating blood volume change in diabetic ketoacidosis?
337. What is the pathogenetic mechanism of Kussmaul respiration in diabetic ketoacidosis?
338. What is the role of insulin in compensating for persistent hyperglycemia?
339. What is the consequence of eating too much fat?
340. What causes lipid maldigestion?
341. What causes lipid maldigestion?
342. What is the pathogenetic mechanism of lipid maldigestion?
343. What causes lipid maldigestion?
344. What causes lipid maldigestion?
345. Which lipid metabolic processes are deregulated in liver pathology?
346. What are the changes in lipid metabolism in liver failure?
347. What are the changes in lipid metabolism in liver failure?
348. What are the changes in lipid metabolism in liver failure?
349. What is the pathogenetic mechanism of lipid maldigestion in small bowel mucosal inflammation?
350. What is the pathogenetic mechanism of lipid maldigestion in liver disease?
351. What is the pathogenetic mechanism of lipid malabsorption in intestinal lymphatic vessel occlusion?
352. What are the consequences of lipid malabsorption?
353. What is the consequence of lipid malabsorption?
354. What are the consequences of lipid malabsorption?
355. What are the consequences of lipid malabsorption?
356. What are the consequences of lipid malabsorption?
357. What type of hyperlipidemia indicates increased chylomicrons in the blood?
358. in which pathologic processes is hyperlipidemia of transport demonstrated?
359. What are the consequences of eating too much protein?
360. What is the pathogenetic factor of protein maldigestion in protein starvation?
361. What is the pathogenetic factor of protein maldigestion in protein starvation?
362. In which pathologic processes does protein maldigestion occur?
363. What pathologic processes are associated with protein maldigestion?