**Metabolic dyshomeostasis**

1. What substances are produced under bacterial fermentation in the digestive tract?

2. What conditions cause bacterial fermentation of carbohydrates in the stomach?

3. What is the consequence of bacterial fermentation of the carbohydrates in the stomach?

4. What is the cause of zaharides maldigestion?

5. How does the secretion of insulin and glucagon change in excessive ingestion of carbohydrates?

6. How does the secretion of insulin and glucagon change in period of starvation?

7. How does change the glycemia in liver failure?

8. In what cases is increased bacterial fermentation of carbohydrates at the level of large intestine?

9. What are the consequences of carbohydrates fermentation in the large intestine?

10. What is the consequence of cellulose deficiency in food ration?

11. How does the carbohydrate metabolism change in liver failure?

12. What is the cause of monozaharides malabsorption at the level of small intestine?

13. What is the consequence of carbohydrates malabsorption?

14. How does the content of nutritive substances from the liver change in carbohydrates deficiency?

15. What are the compensatory reactions for maintaining normoglycemia in long lasting starvation?

16. How does the function of endocrine glands change in carbohydrate deficiency?

17. What are the endogenous sources of glucose for maintaining normal value of glycemia in long lasting starvation?

18. What is the mechanism of protein usage for gluconeogenesis during starvation?

19. What proteins undergo catabolic processes during carbohydrate deficiency?

20. What are the possible causes for increased gluconeogenesis from endogenous proteins?

21. What are the endocrine reactions to excessive consumption of carbohydrates?

22. Which hormone inhibits process of gluconeogenesis?

23. Which hormone inhibits process of glycogenolysis?

24. Which hormone activates process of hepatic glycogenogenesis?

25. What are the homeostatic reactions of hyperglycemia?

26. What is the mechanism of glucosuria in excessive carbohydrates consumption?

27. What are the causes of hypoglycemia?

28. What are the compensatory reactions of hypoglycemia?

29. What are the consequences of hypoglycemia?

30. How does the lipidemia change in hypoglycemia?

31. How does the content of lipids and glycogen in the liver change in hypoglycemia?

32. What type of liver dystrophy is possible in case of long lasting hypoglycemia?

33. What are the consequences of alimentary hyperglycemia?

34. What are the consequences of long lasting hyperglycemia?

35. What are the compensatory mechanisms in alimentary hyperglycemia?

36. What is the pathogenic chain of disturbances as result of hyperglycemia?

37. How does the circulatory volume and viscosity of the blood change in hyperglycemia caused by hypoinsulinism?

38. What are the effects of catecholamines in the period of carbohydrate deficiency?

39. How does hydric metabolism change in diabetic hyperglycemia?

40. What factors determine the pathogenesis of diabetic ketoacidosis?

41. What is the pathogenetic mechanism of diabetic ketoacidosis?

42. What are the adverse effects of gluconeogenesis intensification from aminoacids in hypoglycemia, as compensatory mechanism?

43. How does the blood osmolarity, glycemia, the volume of circulatory blood, arterial systemic pressure and diuresis change in diabetic ketoacidosis?

44. What are the changes of acid – base balance in the intra- and extracellular space in diabetic ketoacidosis?

45. What are the paraclinic signs of hydroelectrolitic imbalance in diabetic ketoacidosis?

46. What is the pathogenetic mechanism of hydroelectrolytic imbalance in diabetic ketoacidosis?

47. What is the pathogenetic mechanism of Kussmaul breathing in diabetic ketoacidosis?

48. What is the consequence of persistent hyperglycemia in insulin deficiency?

49. What is the pathogenetic mechanism of dehydration in diabetic ketoacidosis?

50. What is the pathogenetic mechanism of hypoglycemia in administration of exogenous insulin?

51. What are the functional changes of neuron in carbohydrate starvation?

52. What is the pathophysiologic mechanism of ketogenesis in carbohydrate starvation?

53. What is the pathogenetic mechanism of hypoglycemia in case of insulinom (tumor of beta cells of pancreas)?

54. What is the “threshold” value of glucose reabsorption in the primary urine at the level of renal tubes?

55. What is the role of kidney in carbohydrate starvation?

56. How does the carbohydrate metabolism change in primary hypercorticism?

57. What are the causes of galactosemia?

58. What are the consequences of galactosemia in new-borns?

59. How does the blood content of the blood change in excessive consumption of the lipids?

60. What are the metabolic consequences of excessive consumption of the lipids?

61. What are the consequences of lipids insufficiency?

62. What are the causes of lipids maldigestion?

63. What is the pathogenetic mechanism of lipids maldigestion?

64. What are the consequences of lipids malabsorption?

65. What substances are not absorbed at the level of intestinal epithelium in case of enteritis?

66. Which endocrine disorders lead to intense mobilization of lipid reserves with transport hyperlipidemia?

67. What is the pathogenetic mechanism of lipid maldigestion in inflammation of small intestine mucosa?

68. What is the pathogenetic mechanism of transport hyperlipidemia in excess of glucocorticoids?

69. Which are the digestive effects under excessive consumption of fats?

70. What are the consequences of lipid maldigestion?

71. Which lipoproteins fraction will increase in case of retention hyperlipidemia in insulin deficiency?

72. How does the lipids fraction from the blood change in lipid maldigestion?

73. In what form of lipoproteins are transported absorbed lipids from the small intestine?

74. In what form of lipoproteins are transported synthesized lipids in the liver?

75. In what form of lipoproteins are transported mobilized lipids from adipose tissue?

76. In what form is transported cholesterol to the organs?

77. What are the consequences of transport hyperlipidemia in insulin deficiency?

78. In what forms of lipoproteins is transported cholesterol from the organs to the liver?

79. What are the causes of retention hyperlipidemia?

80. What type of hyperlipidemia shows increased level of chylomicrons n the blood?

81. What are the consequences of alimentary hyperlipidemia?

82. What are the changes of lipid metabolism in liver failure?

83. What is the pathogenetic mechanism of hyperlipidemia in insulin deficiency?

84. What is the pathogenetic mechanism of hyperlipidemia in stress reaction?

85. What is the pathogenetic mechanism of transport hyperlipidemia in case of catecholamines hypersecretion?

86. How does the lipid metabolism change in excessive ingestion of sodium chloride?

87. How does the lipid metabolism change in chronic pathology of pancreas?

88. What is the pathogenetic mechanism of lipid malabsorption in affection of terminal ileum?

89. What is the pathogenetic mechanism of lipid malabsorption in liver failure?

90. What is the pathogenetic mechanism of lipid malabsorption in occlusion of intestinal lymphatic vessels?

91. What is the pathogenetic mechanism of retention hyperlipidemia in case of nephritic syndrome?

92. What is the pathogenetic mechanism of lipid dystrophy of liver in case of protein starvation?

93. What are the pathogenetic factors of fatty liver in case of excessive lipid consumption?

94. What are the etiological factors of atherosclerosis?

95. Which hormones accelerate the metabolic rate and reduce serum level of blood cholesterol?

96. What does represent hypoproteinemia?

97. What is the etiological factor of Kwashiorkor syndrome?

98. What are the consequences of excessive consumption of proteins?

99. What are the pathological factors of protein maldigestion in protein starvation?

100. What is the consequence of absorption of native alimentary proteins in the digestive tract?

101. How does the blood protein content change in liver failure?

102. What disturbances of digestive tract lead to maldigestion of proteins?

103. How does the protein metabolism change in maldigestion of proteins?

104. How does the digestive processes from large intestine change in maldigestion of protein?

105. In what pathological processes develops hypoproteinemia?

106. In what pathological processes develops maldigestion of proteins?

107. What is the mechanism of dehydration in protein starvation?

108. What are the changes of oncotic pressure and diuresis in protein starvation?

109. What is the cause of hemorrhage syndrome in liver failure?

110. What are the causes of aminoacids malabsorption at the level of intestinal mucosa?

111. How does the protein metabolism change in liver failure?

112. What are the consequences of hypoproteinemia?

113. In what pathological processes develops hyperproteinemia?

114. What are the consequences of hyperproteinemia?

115. What substances are formed in excess under intensification of nucleoproteins catabolism?

116. In what cases is found negative nitrogen balance?

117. In what cases is found positive nitrogen balance?

118. What is the mechanism of peripheral edemas in protein starvation?

119. What are the pathogenetic factors of immunodeficiency in protein starvation?

120. What is the pathogenetic factor of hyperaminoacidemia in liver failure?

121. How does the protein metabolism change in liver failure?

122. What are the consequences of reduced detoxification function of the liver in liver failure?

123. What are the consequences of protein metabolic changes in liver failure?

124. What substances are formed into the large intestine under the protein putrefaction?

125. What toxic substances provoke intestinal autointoxication?

126. What pathological processes provoke intestinal autointoxication?

127. What is the pathologic factor of hemic hypoxia in protein starvation?

128. What is the consequence of hyperamonemia in liver failure?

129. What is the pathogenetic mechanism of infections in liver failure?

130. What type of acid –base imbalance is specific for exaggerated consumption of proteins?

**Hydroelecrolytic dishomeostasis**

1. What does represent dehydration/overhydration?
2. What are the causes of hypertonic/isotonic/hypotonic hyperhydration?
3. What are the causes of hypertonic/isotonic/hypotonic dehydration?
4. What is the pathogeny of hypertonic/isotonic/hypotonic hyperhydration?
5. What is the pathogeny of hypertonic/isotonic/hypotonic dehydration?
6. In what pathological processes do develop hypertonic/isotonic/hypotonic hyperhydration?
7. In what pathological processes do develop hypertonic/isotonic/hypotonic dehydration?
8. How the plasma osmolarity and cell volume is changed in hypertonic/isotonic/hypotonic hyperhydration?
9. How the plasma osmolarity and cell volume is changed in hypertonic/isotonic/hypotonic dehydration?
10. How the capillary-interstitial and interstitium-cell water exchange are changed in hypertonic/isotonic/hypotonic dehydration?
11. How the capillary-interstitial and interstitium-cell water exchange are changed in hypertonic/isotonic/hypotonic hyperhydration?
12. What are the changes in the blood (hemic changes) in hypertonic/isotonic/hypotonic hyperhydration?
13. What are the changes in the blood (hemic changes) in hypertonic/isotonic/hypotonic dehydration?
14. What are electrolytic changes in the blood in hypertonic/hypotonic hyperhydration?
15. What cardiovascular manifestations are present in overhydration/dehydration?
16. What hemic changes are present in overhydration/dehydration?
17. What is the pathogenetic chain of arterial hypotension in dehydration?
18. How the protein blood level is changed in dehydration/overhydration?
19. What hydroelectrolytic disorders develop in vasopressin deficiency/vasopressin excess?
20. How the blood osmolarity and sodium concentration is changed in vasopressin deficiency/vasopressin excess?
21. How the blood osmolarity and cell volume is changed in vasopressin deficiency/vasopressin excess?
22. What is the pathogeny of hydroelectrolytic imbalance in vasopressin deficiency/vasopressin excess?
23. What is the pathogeny of hydroelectrolytic imbalance in water deprivation?
24. How the blood osmolarity and sodium concentration are changed in water deprivation?
25. How the blood osmolarity and cell volume is changed in water deprivation?
26. How the blood osmolarity, sodium concentration and protein level in the blood are changed in water deprivation?
27. What is the pathogeny of hypernatremia in water deprivation?
28. How the blood osmolarity, sodium concentration and cell volume are changed in excessive intake of water?
29. How the blood osmotic pressure and oncotic pressure are changed in excessive intake of water?
30. What is the pathogeny of hydroelectrolytic imbalance in enhanced sweating?
31. How the blood osmolarity, sodium concentration and protein level in the blood are changed in excessive sweating?
32. How the plasma osmolarity and cell volume are changed in excessive sweating?
33. How the plasma osmolarity and sodium concentration in the blood are changed in excessive sweating?
34. What is the pathogeny of hydroelectrolytic imbalance in pulmonary hyperventilation?
35. How the plasma osmolarity and cell volume are changed in pulmonary hyperventilation?
36. How the plasma osmolarity and sodium concentration in the blood are changed in pulmonary hyperventilation?
37. How the blood osmolarity, chlorine concentration and hydrogen ion level area changed in incoercible vomiting?
38. What hydroelectrolytic dyshomeostasis does develop in hypertonic dehydration?
39. How does occur the compensation of hydric dyshomeostasis in hypertonic dehydration?
40. What hydroelectrolytic dyshomeostasis does develop in diarrhea?
41. What electrolytic dyshomeostasis does develop in hypertonic/isotonic/hypotonic dehydration?
42. What is the pathogenetic mechanism of hyperkalemia in hypotonic dehydration?
43. What is the compensatory mechanism of osmotic dyshomeostasis in hypotonic dehydration?
44. What is the pathogeny of hydroelectrolytic imbalance in mineralocorticoid deficiency?
45. What change of circulatory blood volume is attested in hyperhydration?
46. How the oncotic pressure is changed in hyperhydration?
47. What are the pathogenetic mechanisms of edema in hyperhydration?
48. What are the compensatory reactions in isotonic hyperhydration?
49. How is define hypotonic/isotonic/hypertonic hyperhydration?
50. What are the pathogenetic mechanisms of hyperkalemia in hypotonic hyperhydration?
51. What pathological manifestations develop in hypotonic hyperhydration?
52. What is the mechanism of hemoglobinuria in hypotonic hyperhydration?
53. What is the pathogeny of hydric dyshomeostasis in aldosteron hypersecretion/aldosteron hyposecretion?
54. How the blood osmolarity, sodium level and hydrogen ion level are changed in diarrhea?
55. How the blood osmolarity, protein level in the blood, and potassium level in the blood are changed in II-III degree burns?
56. How the blood volume and concentration of blood cells are changed in intravascular dehydration?
57. What are compensatory reactions in intravascular dehydration/intravascular overhydration?
58. How the osmotic and oncotic blood pressure are changed in massive infusion of isotonic NaCl solution?
59. How the volume of interstitial and intracellular fluids is changed in massive infusion of NaCl solutions?
60. What are the immediate changes of blood oncotic and osmotic pressures after massive infusion of 5% glucose solution?
61. What are the late changes of blood oncotic and osmotic pressures after massive infusion of 5% glucose solution?
62. What are the immediate changes of interstitial and intracellular fluid volume after massive infusion of 5% glucose solution?
63. What are the late changes of interstitial and intracellular fluid volume after massive infusion of 5% glucose solution?
64. How is defined hypernatremia/hyponatremia?
65. What does represent hypernatremia/hyponatremia?
66. How the circulatory blood volume and blood viscosity are changed in absolute hypernatremia/relative hypernatremia?
67. How the circulatory blood volume and concentration of blood cells are changed in absolute hypernatremia/relative hypernatremia?
68. How the circulatory blood volume and blood viscosity are changed in absolute hyponatremia/relative hyponatremia?
69. How the circulatory blood volume and concentration of blood cells are changed in absolute hyponatremia/relative hyponatremia?
70. What hydric dyshomeostasis does represent absolute hypernatremia/relative hypernatremia?
71. What hydric dyshomeostasis does represent absolute hyponatremia/relative hyponatremia?
72. What is the pathogeny of absolute hypernatremia/relative hypernatremia?
73. What is the pathogeny of absolute hyponatremia/relative hyponatremia?
74. In what pathological processes develops absolute hypernatremia/relative hypernatremia?
75. In what pathological processes develops absolute hyponatremia/relative hyponatremia?
76. What sodium dyshomeostasis does develop in hypersecretion of vasopressin/hyposecretion of vasopressin?
77. What sodium dyshomeostasis does develop in hypersecretion of mineralocorticoids/hyposecretion of mineralocorticoids?
78. How the blood osmolarity, cell volume and intravascular volume are changed in absolute hypernatremia/relative hypernatremia?
79. How the blood osmolarity, cell volume and intravascular volume are changed in absolute hyponatremia/relative hyponatremia?
80. What is the pathogeny of cell volume changes in absolute hypernatremia/relative hypernatremia?
81. How the arterial blood pressure is changed in sodium deficiency?
82. What is the pathogeny of sodium imbalance in chronic liver disorders?
83. What sodium dyshomeostasis does develop in chronic liver disorders?
84. What are the compensatory reactions in absolute hypernatremia?
85. What is the final consequence of hypernatremia for cells
86. What are the electrolytic changes in primary hyperaldosteronism?
87. What is the pathogeny of edema in primary hyperaldosteronism?
88. In what pathological processes develop secondary hyperaldosteronism?
89. What is the normal concentration of potassium ions in the blood?
90. What value of potassium in the blood does represent hyperkalemia/hypokalemia?
91. In what pathological processes does develop hyperkalemia/hypokalemia?
92. What acidobazic dyshomeostasis does develop in hyperkalemia/hypokalemia?
93. What is the pathogeny of acidobazic dyshomeostasis in hyperkalemia/hypokalemia?
94. What are the changes on ECG in hyperkalemia/hypokalemia?
95. How does the resting membrane potential and neuromuscular excitability change in moderate hyperkalemia ( 5,5 - 6,0 mEq/L)?
96. How does the resting membrane potential and neuromuscular excitability change in severe hyperkalemia (peste 6,5 mEq/L)?
97. How does the resting membrane potential and neuromuscular excitability change in hypokalemia?
98. What are the electrophysiological changes in the heart in hyperkalemia/hypokalemia?
99. What is the pathogeny of potassium dysbalance in chronic liver disorders?
100. What is the pathogeny of potassium dysbalance in treatment with insulin?
101. What is the pathogeny of potassium dysbalance in hyperglycemia?
102. What is the pathogeny of potassium dysbalance in acidosis/alkalosis?
103. What are the clinical manifestations of hyperkalemia/hypokalemia?
104. What is the mechanism of increased amplitude of T wave on ECG in hyperkalemia?
105. What is the mechanism of additional U wave on ECG in hypokalemia?
106. What is the normal Ca2+ ions concentration in the blood?
107. What hormones control the calcium balance in the body?
108. What hormones have hypercalcemiant/hypocalcemiant effect?
109. What is the mechanism by which parathyroid hormone regulates the calcium balance?
110. What is the mechanism by which thyreocalcitonin regulates the calcium balance?
111. What are the biological functions of calcium ions?
112. What are the causes of hypercalcemia/hypocalcemia?
113. What are the pathogenetic mechanisms of hypercalcemia/hypocalcemia?
114. What are the pathophysiological mechanisms of calcium dyshomeostasis in liver disorders/renal disorders?
115. What is the pathogeny of calcium dysbalance in catecholamine hypersecretion?
116. What is the pathogeny of calcium dyshomeostasis in excess of parathyroid hormone/deficiency of parathyroid hormone?
117. What is the pathogeny of neuromuscular excitability disorders in hypercalcemia/hypocalcemia?
118. What are the cardiovascular manifestations in hypocalcemia?
119. What are the manifestations in hypercalcemia/hypocalcemia?
120. What is pathogeny of osteomalacia in hypocalcemia?
121. What are the compensatory reactions in hypercalcemia/hypocalcemia?
122. What severe complications of hypocalcemia can develop in children?
123. What is the mechanism of hypocalcemia in bile deficiency in the small intestine?

**Acido-base dyshomeostasis**

1. What does represent acidosis/alkalosis?
2. What are the criteria of acidosis/alkalosis?
3. What does represent respiratory acidosis/respiratory alkalosis?
4. What does represent metabolic acidosis/metabolic alkalosis?
5. What does represent compensated acidosis/decompensated acidosis?
6. What does represent compensated alkalosis/decompensated alkalosis?
7. In what processes does develop metabolic acidosis/respiratory acidosis?
8. In what processes does develop metabolic alkalosis/respiratory alkalosis?
9. What are the pathogenetic factors of metabolic acidosis/respiratory acidosis?
10. What are the pathogenetic factors of metabolic alkalosis/respiratory alkalosis?
11. How do change pH and PaCO2 in metabolic acidosis/metabolic alkalosis?
12. How do change pH and PaCO2 in respiratory acidosis/respiratory alkalosis?
13. How do change pH and NaHCO3 in metabolic acidosis/metabolic alkalosis?
14. How do change pH and NaHCO3 in respiratory acidosis/respiratory alkalosis?
15. How do change respiratory frequency and PaCO2 in metabolic acidosis/metabolic alkalosis?
16. What acidobazic dyshomeostasis develop in aldosteron hypersecretion/aldosteron hyposecretion?
17. What is the pathogeny of acidobazic dyshomeostasis in aldosteron hypersecretion/aldosteron hyposecretion?
18. Accumulation of what endogenous substances can lead to acidosis?
19. Accumulation of what acid compounds lead to development of metabolic acidosis in insulin deficiency?
20. What is the pathogenetic factor of acidobazic dyshomeostasis in insulin deficiency?
21. How do change pH and bicarbonate in insulin deficiency?
22. What is the pathogeny of acidobazic dyshomeostasis in inanition (starvation)?
23. How do change pH and bicarbonate in inanition?
24. What is the pathogeny of acidobazic dyshomeostasis in hypoxia?
25. How do change pH and bicarbonate in hypoxia?
26. What is the pathogeny of acidobazic dyshomeostasis in diarrhea?
27. What is the pathogeny of acidobazic dyshomeostasis in liver disorders?
28. What is the pathogeny of acidobazic dyshomeostasis in pulmonary hyperventilation/pulmonary hypoventilation?
29. How do change pH and PaCO2 in pulmonary hypoventilation/pulmonary hyperventilation?
30. With what electrolytic dyshomeostasis are associated metabolic acidosis/metabolic alkalosis?
31. What is the pathogeny of sodium dyshomeostasis in acidosis/alkalosis?
32. What is the pathogeny of potassium dyshomeostasis in acidosis/alkalosis?
33. What is the pathogeny of calcium dyshomeostasis in acidosis/alkalosis?
34. What is the cause of pulmonary hyperventilation in metabolic acidosis?
35. What is the cause of pulmonary hypoventilation in metabolic alkalosis?
36. What are the causes of respiratory changes in metabolic acidosis/metabolic alkalosis?
37. In what acidobazic dyshomeostasis does develop compensatory pulmonary hyperventilation?
38. In what acidobazic dyshomeostasis does develop compensatory pulmonary hypoventilation?
39. What are the compensatory reactions in metabolic acidosis/metabolic alkalosis?
40. What are clinical manifestations in acidosis/alkalosis?
41. What are the pathophysiological mechanisms of reduced neuromuscular excitability in acidosis?
42. What are the changes in the blood in metabolic acidosis/respiratory acidosis?
43. What are the changes in the blood in metabolic alkalosis/respiratory alkalosis?
44. What is pathogeny of arterial hypotension in acidosis?
45. How des involve the hemoglobin buffer system in acidosis compensation?
46. What is the pathogenetic factor of osteomalacia and osteoporosis in acidosis?
47. What are the effects of hypercapnia in respiratory acidosis?
48. How does change the oxyhemoglobin dissociation curve and oxygen affinity to hemoglobin in acidosis/alkalosis?
49. What are the compensatory reactions in acidosis/alkalosis?
50. What does hypoxia represent?
51. What does hypoxemia represent?
52. On what depends vulnerability of the different organs to hypoxia?
53. Which is the vulnerability of different organs to hypoxia (in descending order)?
54. What type of hypoxia develops in alpine disease?
55. What type of hypoxia develops in disturbance of processes of intracellular using of oxygen?
56. What is the pathogenesis of hemic hypoxia in intoxication with nitrates?
57. What is the pathogenesis of hemic hypoxia in hemoglobinopathy?
58. What is the pathogenesis of hemic hypoxia in bleeding?
59. What is the pathogenesis of hemic hypoxia in intoxication with carbon monoxide?
60. In what cases develops histotoxic hypoxia?
61. What pathological conditions characterized by deviation to the right of oxyhemoglobin dissociation curve deviates to the right?
62. What pathological conditions characterized by deviation to the right of oxyhemoglobin dissociation curve deviates to the left?
63. What are the manifestations of brain hypoxia?
64. What pathological processes develop in the brain in condition of decreased arterial partial pressure of O2 bellow 20mmHg
65. In what conditions increases the rate of dissolved O2 in the blood?
66. What does hyperoxia represent?
67. In what pathological processes develops the hyperdynamic hyperoxia?
68. What does the dysmetabolic hyperoxia represent?
69. In what pathology is contraindicated therapeutic application of oxygenum?
70. What are the harmful effects of hyperoxia?
71. What is the mechanism of CO2 accumulation in hyperoxia?
72. How does the acid-base balance change in hyperoxia?