

PATHOLOGICAL PHYSIOLOGY – DENTISTRY  
FINAL EXAMINATION QUESTIONS

Knowledge of etiology and pathogenic mechanism with the focus on diseases with orofacial manifestation and sudden life-threatening complications will be required. Clinical signs and diagnostic procedures should be interpreted in the context with pathophysiology of the given pathologic conditions. The oral part of the exam consists of 3 questions: 1 question from general pathophysiology part (1-20) and 2 questions from the pathophysiology of organ systems (21 - 87).

GENERAL (1-20) AND ORGAN PATHOPHYSIOLOGY (21-87)

1. Genetic predisposition to diseases. Mechanism of the development of genetic disorders from mutated protein to pathologic phenotype. Gene polymorphism.
2. Dysproteinemia. Paraproteinemia. Acute phase proteins.
3. Damage of the organism caused by electric current, heat, cold.
4. Damage of the organism caused by light (visible, UV and infrared) and ionizing radiation.
5. Intoxication of organism by chemical agents: explain the pathogenesis of intoxication by carbon oxide (CO), lead (Pb), and mercury (Hg).
6. Chemical carcinogens. Effects of the tobacco smoking.
7. Pathophysiology of vitamin deficiencies.
8. Disturbances in the balance and distribution of iron. Trace elements and diseases. Laboratory manifestation of iron deficiency.
9. Inflammation. Systemic inflammatory response. Fever. Septic shock. Multiorgan dysfunction syndrome.
10. Stress and reaction of the organism to stress.
11. Allergy. Anaphylactic reaction. Anaphylactic shock.
12. Pathophysiology of inherited and acquired immunity defects. Immunodeficiency. Autoimmunity.
13. Hypoxic and reperfusion damage of the tissues. Tissue hypoxia. Cell reaction to hypoxia. Oxygen toxicity.
14. Pathophysiology of acid-base disturbances. Acid-base balance status examination.
15. Pathophysiology of electrolyte disturbances. Disturbances in the balance and distribution of sodium, potassium, and chlorides.
16. Disturbances in the balance and distribution of calcium and phosphates.

17. Dehydration of the organism. Hyperhydration of the organism. Edema. Ascites.
18. Regeneration and reparation of tissues. Wound healing.
19. Mechanisms of malignant cell transformation. Genome instability. Tumor growth and interaction of tumor with the organism. Paraneoplastic syndromes.
20. Disturbances of growth and development.
  
21. Malignant hematopoiesis. Leukemia. Lymphoma. Multiple myeloma (plasmocytoma).
22. Anemia. Classification of anemia based on pathogenesis. Functional consequences of anemia (anemic syndrome).
23. Acute and chronic complication of blood transfusion. Examinations to prevent blood transfusion complications.
24. Inherited and acquired defects of primary hemostasis. Thrombocytopenia. Thrombocytopathia. Vasculopathy.
25. Inherited and acquired defects of secondary hemostasis. Coagulopathy.
26. Thrombophilia. Thromboembolic disease. Pulmonary embolism.
27. Disseminated intravascular coagulation (DIC).
28. Disturbances of blood pressure in arterial and venous system: causes and consequences. Invasive and noninvasive blood pressure monitoring.
29. Pathophysiology of arterial hypertension.
30. Pathophysiology of the circulatory shock. Arterial hypotension. Circulatory collapse.
31. Hemodynamic consequences of right-to-left and left-to-right circulatory shunts.
32. Hemodynamic consequences of valve disease.
33. Pathophysiology of disturbances in cardiac output (causes and consequences). Evaluation of cardiac output. Cardiac index.
34. Ischemic heart disease (IHD). Angina pectoris. Myocardial infarction. Complications of myocardial infarction. Ischemic changes on ECG.
35. Pathogenesis of heart arrhythmias: local and systemic factors. Disturbances in the generation and conduction of heart action potential. ECG manifestation of arrhythmias.
36. Circulatory consequences of heart arrhythmias.
37. Pathophysiology of left and right heart failure. Compensatory mechanisms of heart failure. Pulmonary hypertension. Cor pulmonale.
38. Pathophysiology of atherosclerosis. Manifestations and consequences of atherosclerosis.

39. Protective breathing reflexes. Cough. Bronchial asthma.
40. Type I and type II respiratory insufficiency. Alveolar hypoventilation. Ventilation/perfusion mismatch.
41. Causes and consequences of alveolo-capillary membrane diffusion and lung perfusion defects.
42. Pathophysiology of obstructive and restrictive pulmonary disorders. Spirometry.
43. Aspiration of foreign objects and fluids. Upper airway obstruction.
44. Changes in partial pressure of arterial blood gases (O<sub>2</sub>, CO<sub>2</sub>): causes and consequences. Analysis of arterial blood gases.
45. Pathophysiology of acute renal failure.
46. Pathophysiology of chronic renal failure.
47. Causes and consequences of glomerular filtration disorders.
48. Causes and consequences of tubular renal function defects.
49. Pathophysiology of dental caries.
50. Pathophysiology of periodontal diseases.
51. Pathophysiology of insufficient production of saliva.
52. Manifestation of systemic and organ specific disorders in oral cavity (e.g. malignant disorders, endocrine disorders, immunodeficiencies, liver disorders).
53. Disorders of the swallowing and food passage through esophagus (dysphagia). Gastro-esophageal reflux.
54. Pathophysiology of peptic ulcer disease.
55. Acute and chronic gastritis.
56. Pathophysiology of intestinal inflammations. Crohn's disease. Ulcerative colitis. Gluten-sensitive enteropathy.
57. Large bowel disorders. Constipation. Ileus.
58. Colonic polyps. Colorectal carcinoma.
59. Hepatitis. Toxic liver damage. Liver steatosis.
60. Liver failure. Hepatic (portal-systemic) encephalopathy. Liver cirrhosis.
61. Pathophysiology of gall bladder and bile ducts disorders. Cholelithiasis.
62. Principals of the negative feedback controls of hormone secretion. Functional tests in endocrinology.
63. Primary and secondary endocrine disturbances. Receptor and post-receptor defects.
64. Pathophysiology of thyroid gland diseases.
65. Type 1 diabetes mellitus (IDDM). Diabetic coma.

66. Type 2 diabetes mellitus. Metabolic (Reaven's) syndrome.
67. Acute and chronic complications of diabetes mellitus.
68. Pathophysiology of adrenal gland disorders.
69. Pathophysiology of female and male reproductive tract disorders. Pathophysiology of infertility.
70. Disorders of upper (central) and lower (peripheral) motoneurons. Disorders of neuromuscular junction.
71. Lesions of the spinal cord. Damage and regeneration of peripheral nerves. Peripheral neuropathies.
72. Consequences of head and brain trauma. Disorders of consciousness (locked-in syndrome, vegetative state, coma, brain death). Evaluation of consciousness.
73. Disturbances in cerebral circulation. Stroke. Cerebral edema. Intracranial hypertension.
74. Disorders of cognitive functions. Dementia. Aphasia. Alzheimer's disease.
75. Pathophysiology of neurodegenerative movement disorders. Parkinson's disease.
76. Pathophysiology of ataxic disorders. Pathophysiology of balance and posture disorders. Cerebellar disorders. Vestibular system disorders.
77. Demyelinating diseases. Multiple sclerosis.
78. Disorders of hearing.
79. Disorders of the autonomic nervous system.
80. Pain.
81. Seizures and epilepsy.
82. Osteoporosis. Osteomalacia. Rickets. Renal osteodystrophy. Bone fractures and healing of bone fractures
83. Skeletal muscle contraction disorders. Cramps. Tetany.
84. Pathophysiology of inflammatory joints and connective tissue disorders. Rheumatoid arthritis. Systemic lupus erythematosus