Final Exam Study Guide Objectives – Health Sciences 2230

UNIT 1

Chapter 2 – Altered Cellular and Tissue Biology

1. Compare and contrast the adaptive and maladaptive cellular adaptations: atrophy, hypertrophy, hyperplasia, dysplasia and metaplasia.

Chapter 3 – The Cellular Environment: Fluids and Electrolytes, Acids and Bases

2. State the Starling forces on the capillary. Be able to use this information to determine the direction of water movement.

3. Explain edema formation.

4. Describe the important features of sodium, chloride, and water balance, and name diseases that affect these. Name signs and symptoms associated with imbalances.

6. Compare and contrast the important features of acid-base balance: acidosis vs alkalosis, and metabolic vs respiratory causes. Given a patient's arterial blood values, be able to state the exact description of the acid-base imbalance (i.e. "uncompensated metabolic acidosis").

UNIT 2

Chapter 4 – Genes and Genetic Diseases

2. Define and give examples of the following chromosome-related terms: haploid, diploid, autosomes, sex chromosomes, homologous, non-homologous, karyotype, euploid, polyploid (including triploid and tetraploid), aneuploid, trisomy, monosomy, disjunction, and nondisjunction.

Chapter 5 – Genes, Environment, and Common Diseases

1. Define and apply the following terms used to analyze relationships between disease and populations: incidence rate, prevalence rate, risk factor, relative risk, polygenic, and multifactorial.

2. Define and apply the terms liability distribution and threshold of liability as they relate to the threshold model of multifactorial disease.
Chapter 11 – Biology, Clinical Manifestations, and Treatment of Cancer

11. Relate chronic inflammation to cancer cell development.

14. Describe the location and cellular characteristics related to the staging of cancers.

UNIT 3

Chapter 25 - Structure and Function of the Hematologic System

2. Identify the structural characteristics and function of red blood cells.

8. Describe the sequence of events in hemostasis.

Chapter 26 - Alterations of Erythrocyte Function

3. Classify the anemias in one of the following groups: macrocytic-normochromic, microcytic-hypochromic, and normocytic-normochromic.

4. Describe the pathophysiology and any unique clinical manifestations of the following anemias: iron deficiency, pernicious anemia, folic acid deficiency, sideroblastic anemia, aplastic anemia, hemorrhagic anemia, and hemolytic anemia.

Chapter 27 - Alterations of Leukocyte, Lymphoid, and Hemostatic Function

1. Describe terms and causes associated with high or low leukocyte counts: granulocytosis (neutrophilia), neutropenia, eosinophilia, monocytosis, lymphocytosis, and lymphocytopenia.

3. Classify, contrast, and describe the manifestations of leukemia: acute lymphoblastic leukemia (ALL), chronic lymphocytic leukemia (CLL), acute myeloblastic leukemia (AML), chronic myelocytic leukemia (CML).

Chapter 28 - Alteration of Hematologic Function in Children

1. Compare and contrast the two major causes of hemolytic disease of the newborn.

4. Identify the causes and clinical manifestations of hemophilia A (factor VIII deficiency) and von Willebrand disease.
UNIT 4

Chapter 6 - Innate Immunity: Inflammation

4. Describe the following systemic manifestations of acute inflammation: fever, leukocytosis, and increased plasma protein synthesis.

5. Identify and describe the local signs of acute inflammation.

7. Indicate the causes of mast cell degranulation and the effects of the released preformed biomechanical mediators, histamine and neutrophil chemotactic factor.

8. Identify and state the effects of leukotrienes and prostaglandins synthesized by mast cells.

Chapter 7 - Adaptive Immunity

1. Characterize antigens and antibodies (immunoglobulins).

2. Compare and contrast cell-mediated and antibody-mediated (humoral) immunity.

8. Characterize the cellular interactions within the immune response: antigen-presenting cells (APC), T_h cells, T_c cells, T_reg cells, B cells, plasma cells, and memory cells.

Chapter 8 - Alterations in Immunity and Inflammation

2. Compare and contrast the four hypersensitivities (I, II, III, and IV).

7. Describe the reasons a patient may develop graft-versus-host (GVH) disease.

UNIT 5

Chapter 15 – Pain, Temperature Regulation, Sleep, and Sensory Function

10. Explain the pathophysiology of visual disorders: amblyopia, strabismus, cataract, glaucoma, retinal detachment, macular degeneration, presbyopia, myopia, hyperopia, and alterations in color vision.

Chapter 16 – Alterations in Cognitive Systems, Cerebral Hemodynamics, and Motor Function

6. Name the clinical features and pathophysiology of Alzheimer disease.
7. Name the clinical features and pathophysiology of Huntington Disease.

8. Name the clinical features and pathophysiology of Parkinson Disease.

**Chapter 17 – Disorders of the Central and Peripheral Nervous Systems and the Neuromuscular Junction**

2. Explain the location and pathophysiology of brain hematomas: extradural, subdural, subarachnoid, and intraparenchymal hemorrhage.

9. Compare and contrast infectious diseases of the nervous system: bacterial vs viral meningitis; meningitis vs encephalitis.

10. List the key features of multiple sclerosis. Give its pathophysiology and common symptoms.

**UNIT 6**

**Chapter 21 - Alterations of Hormonal Regulation**

2. Distinguish between syndrome of inappropriate ADH (SIADH) and diabetes insipidus.

8. Compare and contrast insulin-dependent (type I) and non-insulin-dependent (type II) diabetes mellitus.

**Chapters 30 - Alterations of Cardiovascular Function**

1. Characterize arteriosclerosis and atherosclerosis; describe the development and consequences of atheromatous plaques.

7. Characterize coronary artery disease (CAD); distinguish between myocardial ischemia and myocardial infarction, and list complications of each.

9. Compare the cardiomyopathies: dilated, hypertrophied, and restrictive.

10. Identify the causes and manifestations of valvular dysfunction: aortic stenosis, mitral stenosis, aortic regurgitation, mitral regurgitation, tricuspid regurgitation, and mitral valve prolapse syndrome.

**Chapter 31 - Alterations of Cardiovascular Function in Children**

1. Describe the congenital heart defects contributing to an increased pulmonary blood flow: patent ductus arteriosus, atrial septal defect (ASD), and ventricular septal defect (VSD).
UNIT 7

Chapter 33 – Alterations of Pulmonary Function

6. Explain the pathophysiology of acute respiratory distress syndrome.

7. Discuss the pathophysiology of asthma.

8. Give the key features and etiology of chronic obstructive pulmonary disease.

Chapter 36 – Alterations of Renal and Urinary Tract Function

1. Explain how proteinuria, blood urea nitrogen, creatinine and glomerular filtration rate are used to diagnose kidney dysfunction.

3. Compare and contrast clinical features of infections in the urinary system (cystitis and pyelonephritis).

6. Describe the pathophysiology and treatment of chronic kidney disease.

Chapter 39 – Alterations of Digestive Function


7. State the pathophysiologic features of gluten-sensitive enteropathy (celiac disease). (Chapter 40)

11. State the clinical features and causes of liver disorders: portal hypertension, cirrhosis, hepatic encephalopathy, and jaundice.