PATHOPHYS Module Exams

Module 1 Exam

Question 1
2.5 / 2.5 pts
True/False:
A bodybuilder’s muscles will display hyperplasia.

True
Correct!

False
It will display hypertrophy.

Question 2
2.5 / 2.5 pts
True/False:

Barrett esophagus is an example of dysplasia.

True
Correct!

False
It’s metaplasia.

Question 3
0 / 2.5 pts
True/False:

Hypertrophy is an increase in the size of an organ or tissue caused by an increase in the number of cells
You Answered

True
Correct Answer

False

Question 4
2.5 / 2.5 pts
True/False:

Hypertrophy can occur under normal and pathological conditions.
Correct!

True

False

Question 5
10 / 10 pts
Match the following:

Deals with the cause of death in a population a. Incidence
Number of new cases in a population at risk during a specified time b. Prevalence
Number of people with the disease in a population in a given time c. Morbidity
The effect of an illness on one's life
d. Mortality

Question 6
2.5 / 2.5 pts
Multiple Choice
Which is **NOT** true of the cytoskeleton?

It controls shape and movement

Cilia and flagella are microtubule-filled cellular extensions
Correct!

It includes peroxisomes and proteasomes
Peroxisomes and proteasomes are not part of the cytoskeleton.

Question 7
1.67 / 2.5 pts
Which of the following move across the cell membrane via diffusion? Select **all** that apply.
Correct!

Oxygen

Glucose
Correct Answer

Water
Correct!

Carbon dioxide

Question 8
2.5 / 2.5 pts
Multiple Choice
Which of the following are **false** regarding cell communication?

Endocrine signaling depends on hormones

Neurotransmitters act through synapses

G-protein linked receptors act through an on-off switch
Correct!

Paracrine signaling releases a chemical into the extracellular fluid that affects its own activity

Question 9
2.5 / 2.5 pts
Which is **true** of the cytoskeleton? Select **all** that apply.
Correct!

It controls shape and movement
Correct!

Cilia and flagella are microtubule-filled cellular extensions

It includes peroxisomes and proteasomes

Question 10
0 / 2.5 pts
Multiple Choice

High blood pressure is an example of which of the following?

Pathology
Correct Answer

Pathophysiology

Physiology
You Answered

No answer text provided.

Question 11
2.5 / 2.5 pts
Multiple Choice

A patient has a fever and rash. What are these examples of?
Correct!

Signs

Symptoms

Both A & B

Question 12
2.5 / 2.5 pts
Multiple Choice
Which of the following is true of a test's sensitivity?

It is how likely the same result will occur if repeated
Correct!

If negative, it can safely be assumed that the person does not have a disease

It is considered a true-negative result

It can only be calculated from people without the disease

Question 13
2.5 / 2.5 pts
Multiple Choice

Which of the following is the effect of an illness on one's life?

Incidence
Correct!

Morbidity

Prevalence

Mortality

Question 14
10 / 10 pts
Define secondary prevention and give an example:
Your Answer:
It is one of three categories in disease prevention. It aims to detect and treat disease early, while the disease is asymptomatic and curable. An example is an annual Pap smear.
Secondary prevention aims to detect and treat disease early, usually while the disease is asymptomatic and curable. Some examples include annual Pap smears to detect early cervical cancer, encouraging smoking cessation, checking blood pressure and cholesterol, and colonoscopy screening.

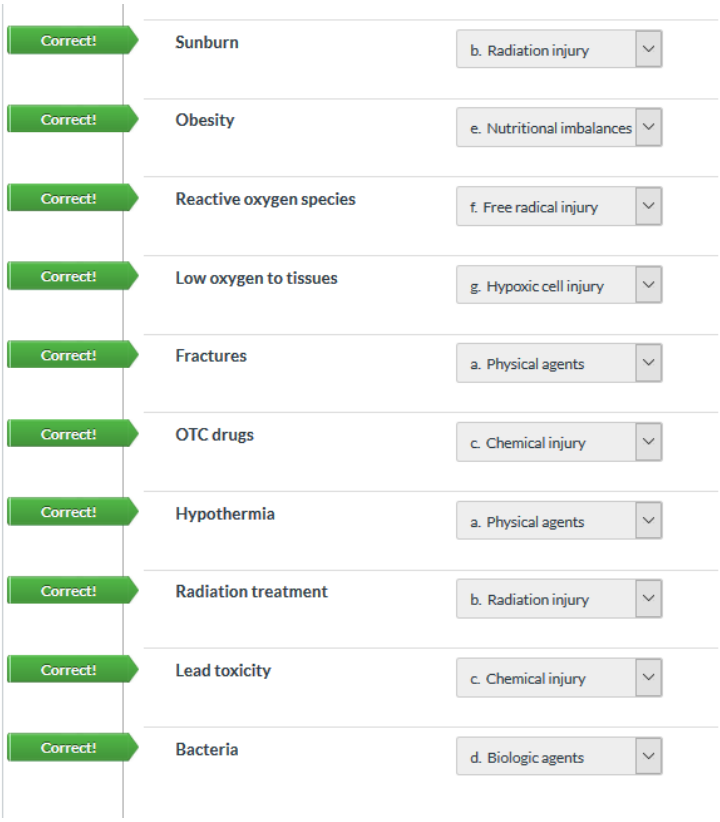
Question 15
10 / 10 pts
Compare and contrast the two types of gangrenous necrosis.
Your Answer:
2 types are dry and moist. In dry gangrenous, the affected tissue is dehydrated, shrinks back and becomes dark brown or black in color. THe spread of dry is slow. In wet, the affected area is cold, swollen, with no pulse. The skin is moist, black, and distended. Small blisters form and as liquefaction occurs, foul ordor emerges. The spread of wet gangrenous is rapid.
In dry gangrene the affected tissue becomes dry and shrinks, the skin wrinkles, and its color changes to dark brown or black. The spread of dry gangrene is slow. It results from a cut off in arterial blood supply and is a form of coagulation necrosis. In wet gangrene, the affected area is cold, swollen, and pulseless. The skin is moist, black, and under tension. Blebs form on the surface, liquefaction occurs, and a foul odor is caused by bacterial action. The spread of tissue damage is rapid.

Question 16
10 / 10 pts
Explain what necrosis is and give an example and description of one type of necrosis.
Your Answer:
Necrosis is cell death in tissue or organ that is still part of a living person. An example of a type of necrosis is coagulative necrosis. This results from a sudden cutoff of the blood supply to an organ, such as the heart.
Necrosis refers to cell death in an organ or tissues that is still part of a living person. It often interferes with cell replacement and tissue regeneration. Coagulative necrosis results most often from a sudden cutoff of blood supply to an organ (ischemia), particularly the heart and kidney. Liquefactive necrosis occurs when some of the cells die but their catalytic enzymes are not destroyed. It is commonly seen with brain infarcts or abscesses. Caseous necrosis occurs as part of granulomatous inflammation and is most often associated with tuberculosis.
Gangrenous necrosis most often affects the lower extremities or bowel and is secondary to vascular occlusion. The term *gangrene* is applied when a considerable mass of tissue undergoes necrosis. In dry gangrene the affected tissue becomes dry and shrinks, the skin wrinkles, and its color changes to dark brown or black. The spread of dry gangrene is slow. It results from a cut off in arterial blood supply and is a form of coagulation necrosis. In wet gangrene, the affected area is cold, swollen, and pulseless. The skin is moist, black, and under tension. Blebs form on the surface,

liquefaction occurs, and a foul odor is caused by bacterial action. The spread of tissue damage is rapid.

Question 17
10 / 10 pts
Match the type of cell injury to the cause. Some answers may be used more than once. (1 point each)

Sunburn	a. Physical agents
Obesity	b. Radiation injury
Reactive oxygen species	c. Chemical injury
Low oxygen to tissues	d. Biologic agents
Fractures	e. Nutritional imbalances
OTC drugs	f. Free radical injury
Hypothermia	g. Hypoxic cell injury
Radiation treatment	
Lead toxicity	
Bacteria	



Question 18
10 / 10 pts
List the 4 types of tissue found in the body. Pick 2 and give a description and example of each.
Your Answer:
Epithelial, Connective, Muscle, and Nervous
Epithelial tissue covers the body's outer surface, lines inner surfaces, forms glandular tissue. It is avascular and can be squamous, cuboidal, and columnar. An example of this type of tissue is our skin. Muscle tissue functions to move our bones, pump blood through the heart, as well as contract blood vessels. Cardiac muscle tissue is an example of muscle tissue.
Epithelial tissue covers the body's outer surface, lines the inner surfaces, and forms glandular tissue. Epithelial tissue has three distinct surfaces and the basal surface is attached to an underlying

basement membrane. It is avascular, meaning without blood vessels. It receives oxygen and nutrients from the capillaries of the connective tissue on which it rests.
Connective or supportive tissue is the most abundant tissue in the body. It connects and binds or supports the various tissues. Its cells produce the extracellular matrix that support and hold tissues together. Connective tissue is divided into two types: connective tissue proper and specialized connective tissue (cartilage, bone, and blood cells). The four types of connective tissue proper are loose (areolar), adipose, reticular, and dense connective tissue.
The function of muscle tissue is to move the skeletal structures, pump blood through the heart, and contract the blood vessels and visceral organs. Muscle tissue can accomplish this by contraction. The two types of fibers that contract are called thin and thick filaments. Thin filaments are called actin, and the thick filaments are myosin. The three types of muscles tissue are skeletal, cardiac, and smooth.
Nervous tissue is distributed throughout the body for communication. It provides the means for controlling body function and for sensing and moving about the environment. The two types of cells are neuron and glial cells. Neurons function is communication. Glial (meaning glue) cells support the neurons.

Question 19
2.5 / 2.5 pts
What is the most studied active transport system in the human body?
Your Answer:
The most studied active transport system is the sodium-potassium-ATPase pump. This pumo moves sodium from inside the cell to outside region, returning potassium to the inside of the cell. If this did not occur, sodium would remain in the cell, water would follow resulting in the cell to swell.
Sodium-potassium (Na^+/K^+)-ATPase pump

Question 20
2.5 / 2.5 pts
What is the term to describe when cells use energy to move ions against an electrical or chemical gradient?
Your Answer:
Active transport
Active transport

Question 21
2.5 / 2.5 pts
Give one function of a membrane potential:
Your Answer:
Generate nerve impulses
Generate nerve impulse, muscle contractions, or cause hormone secretion

Question 22
2.5 / 2.5 pts
What is the term that describes a transport protein to help lipid soluble or large molecules pass through the membrane, that otherwise would not be able to get through?
Your Answer:
Facilitated diffusion
facilitated diffusion

Module 2 Exam-

Question 1
3 / 3 pts
True/False:
Blood tests for tumor markers are the single best screening tool for cancer. Why or why not?
Your Answer:
False. Tumor markers, which can be used for establishig prognosis, monitoring treatment and detecting recurrent disease, have limitiations. Under benign situations, tumor markers can still be elevated. Whereas in early stages of malignancy, not elevated. They have a lack of specificity and are then limited in their ability to screen or diagnose accuratley.
False, they are elevated in benign conditions, most are not elevated in the early stages of malignancy.

Question 2
3 / 3 pts
Tissue biopsy is of critical importance in what role?
Your Answer:
Play a critical role in histologic and cytologic studies for diagnosis of cancers.
Diagnosing the correct cancer and histology.

Question 3
4 / 4 pts
1. List two signs or symptoms a patient may present with that might indicate a cancer diagnosis:

2. What are two side effects commonly experienced by cancer patients?
Your Answer:
1) Bleeding and/or weight loss
2) Anorexia, hair loss
1. Bleeding; sore that doesn't heal; fluid in the pleural, pericardial, or peritoneal spaces; chest pain, shortness of breath, cough, abdominal discomfort or swelling. Other possible answers can include a mass or lump, pain (need to be specific), fatigue, fevers, weight loss

2. Weight loss, wasting of body fat and muscle tissue, weakness, anorexia, and anemia, fatigue, sleep disturbances

Question 4
10 / 10 pts
Explain the TNM system:

Your Answer:
TNM system is a detailed staging system, created by AJCC, is used by cancer facilites. It classifies cancers into stages using 3 tumor components; Tumor, Nodes, Metastasis. T is size and spread of the primary tumor. N is how involved the lymph nodes. M is the extent of metastatic involvement.
Classification:
Tx, T0, Tis, T1-4
Nx, N0, N1-3
Mx, M0, M1

***T* is the size and local spread of the primary tumor.**
***N* is the involvement of the regional lymph nodes.**
***M* is the extent of the metastatic involvement.**

Question 5
10 / 10 pts
1. When would surgery be appropriate in the treatment of cancer?

2. Most chemotherapeutic drugs cause pancytopenia due to bone marrow suppression. What are the 3 possible adverse outcomes of this?
Your Answer:
1. Surgery can be used if the tumor is solid and small with well-defines margins. Also can be used to treat oncologic emergencies and be used as prophylactic measures.
2. 3 possible adverse outcomes are neutropenia, anemia, thrombocytopenia.
1. Surgery is often the first treatment for solid tumors. If the tumor is small with well-defined margins, it can be removed completely. It is also used for oncologic emergencies and prophylactic surgery in high risk patients.

2.
Neutropenia- risk for infections
Anemia- causing fatigue
Thrombocytopenia- risk for bleeding

Question 6
2.5 / 2.5 pts
True/False:
Cell proliferation is the process in which proliferating cells become more specialized cell types.

True
Correct!

False
False, cell differentiation

Question 7
2.5 / 2.5 pts
True/False:
Cell differentiation is the process of increasing cell numbers by mitotic cell division.

True
Correct!

False
False, cell proliferation

Question 8
2.5 / 2.5 pts
What are two important properties that stem cells possess?
Your Answer:
Stem cells possess self-renewal and potency.
Self renewal means that they can undergo mitotic divisions while maintaining undifferentiated state.
Potency is the differentiation potential of stem cells.
Potency and self-renewal

Question 9
0 / 2.5 pts
Which of the following are most likely to have arisen from an adult stem cell?
You Answered

Muscle

Bone
Correct Answer

Epithelial

Neural

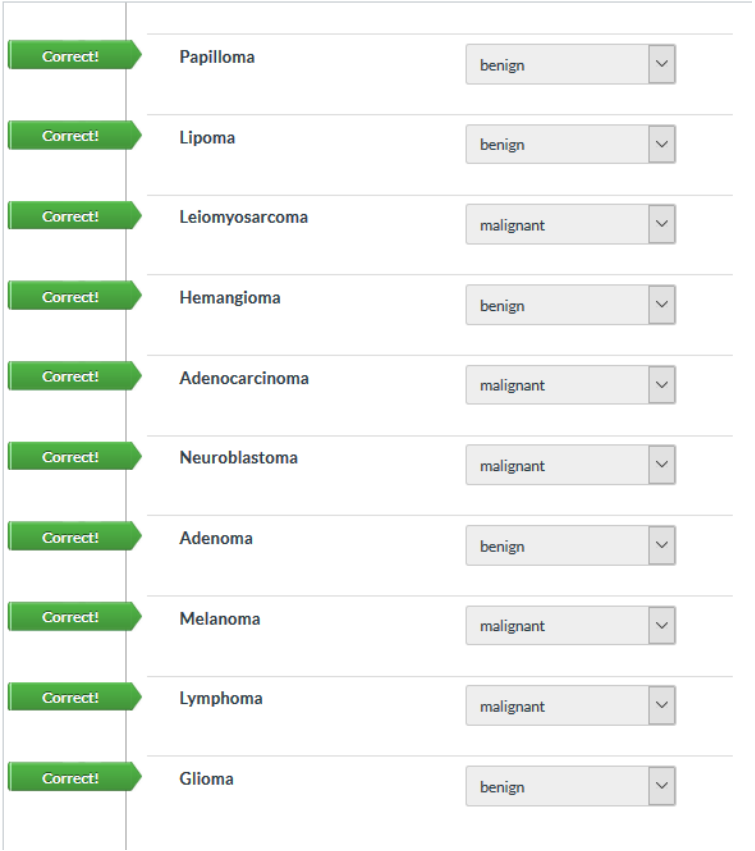
Question 10
4 / 4 pts
What is angiogenesis? Why do tumors need it?
Your Answer:
Angiogenesis is the development of new blood vessels within the tumor. In order to continue growing, it must establish blood vessels and growth factors.
development of new blood vessels within the tumor. They need it to continue to grow.

Question 11
3 / 3 pts
What are normal genes called that become cancer-causing if mutated?
Your Answer:
Proto-oncogenes and Tumor suppressor genes
protooncogenes

Question 12
1 / 3 pts
What is a tumor suppressor gene? Give one example.
Your Answer:
It is a gene that codes for a protein that inhibits cell growth and signals apoptosis. An example is p53.
Tumor suppressor genes are associated with gene underactivity. These genes slow down cell division, repair DNA mistakes, or tell cells when to die. BRCA1 or 2, TP53

Question 13
10 / 10 pts
Determine if the tumor is **benign** or **malignant** based on the nomenclature:
Papilloma
Lipoma
Leiomyosarcoma
Hemangioma
Adenocarcinoma
Neuroblastoma
Adenoma
Melanoma

Lymphoma
Glioma



Question 14
10 / 10 pts
A 62-year-old man with a 30-pack year smoking history is diagnosed with small cell lung cancer with metastasis to the bone. (1) Explain the process of how cancer spreads metastatically. (2) What symptoms might he have presented with? (3) Which screening test would he have benefited from?
Your Answer:
1. Metastasis is a multi-step process. Cancer cells breaks loose from the primary tumor and enters circulation via a blood vessel or lymp system. It finds a new favorable location to invade, grow, and establish blood supply.
2. Patient might have presented with shortness of breath, chest pain, and cough.
3. Patient would have benefited from a chest CT scan.
(1) Metastasis- a cancer cell must break loose from the primary tumor, invade the surrounding extracellular matrix, gain access to a blood vessel, survive its passage in the bloodstream, emerge at a favorable location, invade the surrounding tissue, begin to grow, and establish a blood supply. (2) Chest pain, shortness of breath, cough, bone pain. (3) Yearly low-dose chest CT.

Question 15
3 / 3 pts
Benign tumors have which of the following characteristics? **Select all that apply.**

Undifferentiated cells
Correct!

☑

Grows by expansion

☐

Gains access to blood and lymph channels

Correct!

☑

Growth may stop or regress

Question 16

3 / 3 pts

What are the genetic events that can lead to cancer? **Select all that apply**.

Correct!

☑

Gene amplification

☐

Pleomorphism

Correct!

☑

Point mutation

☐

Seeding

Correct!

☑

Chromosomal translocation

Question 17

4 / 4 pts

List 4 of the 7 risk factors linked to cancer as stated in the module.

Your Answer:

1. heredity
2. environmental agents
3. radiation
4. cancer-causing viruses

Heredity, hormonal factors, obesity, immunologic mechanisms, environmental agents such as chemicals, radiation, and cancer-causing viruses.

Question 18

5 / 10 pts

1. _____ is a systemic treatment that enables drugs to reach the site of the tumor as well as other distant sites.

2. The profound weight loss and wasting of fat and tissue that accompany cancer is known as _____.

Your Answer:

1. Chemotherapy
2. Wasting

1. chemotherapy

2. cancer anorexia-cachexia syndrome

Question 19
3.5 / 3.5 pts
Which of the following are risk factors for developing cancer? **Select all that apply.**
Correct!
☑
HBV
Correct!
☑
Alcohol
Correct!
☑
High intake of smoked meats
☐
Deodorant

Question 20
3.5 / 3.5 pts
All of the following viral agents are correctly paired with the associated lesion except:
○
Human papillomavirus (HPV): genital warts
Correct!
◉
Epstein-Barr virus: carcinoma of the cervix
Epstein Barr is linked to Burkitt lymphoma and nasopharyngeal cancer. Cervical carcinoma is linked to HPV.
○
Hepatitis B virus: hepatocellular carcinoma
○
Human herpes virus-8: Kaposi sarcoma

Question 21
3 / 3 pts
List one example of screening for each method: observation, palpation, and lab test/procedure:
Your Answer:
Observation: skin
Palpation: breast
Lab test: Pap smear
Observation: skin, mouth, external genitalia
Palpation: breast, thyroid, rectum and anus, prostate, lymph nodes
Laboratory tests and procedures: Pap smear, colonoscopy, mammography

MODULE 3
Question 1
5 / 5 pts
Short answer

Explain the challenges of diagnosing autoimmune disorders.
Your Answer:
Diagnosing is made by history, physical, and serological findings. Since some blood tests are more generic, results can be imprecise. Markers can be elevated in the presence of other diseases.Criteria for diagnosis: Evidence of an autoimmune reaction, immunological findings are not second to other conditions, and no other causes are found.
There are over 80 identified, many with overlapping presentations. Many manifestations are nonspecific and are seen in other non-autoimmune diseases. Blood testing isn't perfect either, as some tests are more generic and can be elevated in the presence of other diseases.

Question 2
2.5 / 2.5 pts
Multiple Choice:

Which type of immunity is characterized by the development of a specific response to an antigen?

Innate immunity
Correct!

Adaptive immunity

Autoimmunity

Active immunity

Question 3
2.5 / 2.5 pts
Multiple Choice:
What allows the lymphocyte to differentiate between self and foreign molecules?

Antigen presenting cells

Regulatory cells
Correct!

Major histocompatibility complex (MHC) molecule

Effector cells

Question 4
0 / 3 pts
T lymphocytes produce what type of immunity?
Your Answer:
Adaptive immunity
Cell-mediated

Question 5

2 / 2 pts
Multiple Choice:

Which immunoglobulin passes immune factors from the mother to the fetus?

IgM

IgA
Correct!

IgG

IgD

IgE

Question 6
2 / 2 pts
Multiple Choice:

Which cell type is an early responder and the most abundant in the body?

Lymphocytes

Eosinophils

Basophils
Correct!

Neutrophils

Question 7
3.5 / 3.5 pts
Multiple Choice:

Which is NOT a finding consistent with Graves' disease?

Exophthalmos
Correct!

Hypothyroidism
hyperthyroidism

Goiter

Corneal ulceration

Question 8
10 / 10 pts
A 9-year-old boy with a peanut allergy was exposed to peanuts. He presents to the emergency room with an anaphylactic reaction. (1) What symptoms might he present with? (2) Does the quantity of exposure mean he will have a more severe reaction? (3) What is the initial immediate treatment? (4) What are 2 things people with anaphylaxis should always carry?
Your Answer:
1) shortness of breath, skin redness/hives , abdominal cramping
2) quantity of the exposure does NOT play role on how severe the reaction can be
3) elimination of the food and EpiPen (epiniphereine)
4) carry 2 EpiPens
(1) Any of the following reactions are accepted.
Grade I: erythema and urticaria, with or without angioedema.
Grade II: hypotension, tachycardia, dyspnea, and GI manifestations, like nausea, vomiting, diarrhea, and abdominal cramping from mucosal edema.
Grade III: bronchospasm, cardiac dysrhythmias, and cardiac collapse.
Grade IV: cardiac arrest
(2) No
(3) Epinephrine
(4) identification about allergy, EpiPen

Question 9
3.5 / 3.5 pts
True/False:
Following a heart attack, the area of heart muscle that has undergone necrosis because of lack of blood supply will heal by scar tissue replacement.
Correct!
(●)
True
( )
False

Question 10
3 / 3 pts
Multiple Choice:

Which of the following is an incorrect pairing of a classic manifestation of acute inflammation with its corresponding cause?
( )
Rubor – vasodilation
Correct!
(●)
Dolor – inflammatory cells infiltrating sensory nerves
In acute inflammation, dolor (pain) is caused by increased hydrostatic pressure in tissues and by chemical mediators.
( )
Calor – increased blood flow

Tumor – exudation of fluid and cells into extravascular tissues

Question 11
3.5 / 3.5 pts
True/False:
Lymphocytes are categorized as either granulocytes or agranulocytes.

True
Correct!

False
false, leukocytes

Question 12
3 / 3 pts
True/False:

Passive immunity is achieved through immunization.

True
Correct!

False
false, active immunity

Question 13
2.5 / 2.5 pts
True/False:

B lymphocytes normally produce antibodies against host tissues.

True
Correct!

False

Question 14
3.5 / 3.5 pts
Antibodies are also known as _____?
Your Answer:
immunoglobulins
immunoglobulins

Question 15
3.5 / 3.5 pts
Multiple Choice:
Which of the following hypersensitivity reactions can be treated with the administration of epinephrine?

Correct!

Type I

Type II

Type III

Type IV

Question 16
3.5 / 3.5 pts
Multiple Choice:

Which cell is NOT part of the adaptive immune response?
Correct!

Monocytes

Lymphocytes

Antigen presenting cells

Effector cells

Question 17
3.5 / 3.5 pts
Multiple Choice:

The body’s ability to distinguish self from nonself is termed what?

Autoantibodies

Positive selection
Correct!

Self-tolerance

Anergy

Question 18
5 / 5 pts
Short answer:

What are autoantibodies?
Your Answer:

In autoimmune diseases, the immune sustem loses its ability to recognize self and produces autoantibodies, which act against host tissues

Answer: In many autoimmune diseases, the immune system loses its ability to recognize self and produces what is called autoantibodies, which act against host tissues.

Question 19
10 / 10 pts
Short answer
A 40-year-old man presents with cough and shortness of breath. After an H&P and chest films, it is determined he has pneumocystis carinii pneumonia (PCP). The provider does an HIV test, which is positive. Upon further testing, the man's CD4+ cell count is 100 cells/µL and his viral load is 250,000 copies/mL. (1) Why did the provider do an HIV test after the man was diagnosed with PCP? (2) What classification does this man fall into based on his CD4+ count and symptomatology, and why?
Your Answer:
1) PCP is a lung infection that affects people with weakened immune systems, such as those infected with HIV. It is listed as an opportunistic infection.
2) Overt AIDS. Patient's CD4+ cell count is below 200 cells/uL. Patient also presented with an AIDS-defining illness, such as PCP.
(1) Opportunistic infections are those common organisms that do not produce infection without impaired immune function. (2) The last phase, or AIDS illness, occurs when the CD4+ cell count falls to less than 200 cells/µL or exhibits an AIDS-defining illness. The risk of opportunistic infections and death increases significantly when the CD4+ cell count falls below 200 cells/µL.

Question 20
3.5 / 3.5 pts
Multiple Choice:

Which process is NOT included in wound healing?

Inflammatory

Proliferative
Correct!

Acute-phase response

Remodeling

Question 21
3.5 / 3.5 pts
Multiple Choice:

Which of the following cells is a permanent cell?

Epidermal cell

Hepatocyte

Intestinal mucosal cell
Correct!

Neuron

Renal tubular cell

Question 22
3.5 / 3.5 pts
Fill in the blank
As the CD4 T cell count decreases, the body becomes susceptible to _____ _____.
Your Answer:
opportunistic infections
Answer: opportunistic infections

Question 23
3.5 / 3.5 pts
The term to describe the time when an infected person's blood converts from being negative for HIV antibodies to being positive is called what?
Your Answer:
Seroconversion
Answer: seroconversion

Question 24
3.5 / 3.5 pts
True/False:

A person with HIV is not infectious when they are asymptomatic.

True
Correct!

False

Question 25
2.5 / 2.5 pts
True/False:
The T cells that display the host's MHC antigens and T-cell receptors for a nonself-antigen are allowed to mature, a process termed positive selection.
Correct!

True

False

Question 26
0 / 2.5 pts
Multiple Choice:

The process of leukocyte accumulation in the cellular phase of acute inflammation is called what?
You Answered

Adhesion

Transmigration

Chemotaxis
Correct Answer

Margination

Question 27
2.5 / 2.5 pts
Multiple Choice:

Which lab value will typically be increased in a viral infection?

Neutrophils

Eosinophils

Basophils
Correct!

Lymphocytes

MODULE 4
Question 1
2.5 / 2.5 pts
Which of the following increases the chance of clotting? Select **all** that apply.

Vitamin K deficiency

Von Willebrand factor deficiency
Correct!

Protein C deficiency

Thrombocytopenia

Question 2
2.5 / 2.5 pts
A deficiency in which of the following would lead to a hypercoagulable state? Select **all** that apply.
Correct!
☑
Protein C
Correct!
☑
Protein S
☐
Factor II
☐
Factor VII
☐
Factor IX
☐
Factor X
Correct!
☑
Antithrombin III

Question 3
2.5 / 2.5 pts
Which of the following is a hypercoagulable state? Select **all** that apply.
☐
Hemophilia A
Correct!
☑
Congestive heart failure
Correct!
☑
Smoking
☐
Thrombocytopenia
Correct!
☑
Postsurgical state

Question 4
0 / 2.5 pts
Which of the following is FALSE of disseminated intravascular coagulation (DIC)? Select **all** that apply.
☐
Microthrombi cause vessel occlusion and tissue ischemia
You Answered

☑ It can cause multiple organ failure

☐ Severe hemorrhage results

☐ Obstetric disorders are the main cause of DIC

Correct!

☑ Lab results show a decreased PT, PTT

Question 5
2.5 / 2.5 pts
Well-known causes of disseminated intravascular coagulation (DIC) include each of the following conditions except:

○ Retained dead fetus

○ Carcinoma

○ Gram-negative sepsis

Correct!

◉ Heparin administration

Question 6
2.5 / 2.5 pts
Which of the following does NOT affect the heart's ability to increase its output?

○ Preload

○ Afterload

○ Cardiac contractility

Correct!

◉ Cardiac reserve

○ Heart rate

Question 7
2.5 / 2.5 pts
Which of the following is NOT a regulator of blood pressure?

○ Baroreceptors

Renin-angiotensin-aldosterone system

Vasopressin
Correct!

Parasympathetic nervous system activation

Question 8
2.5 / 2.5 pts
Antiphospholipid syndrome is NOT associated with which of the following? Select **all** that apply.
Correct!

Bleeding risk

Thrombus risk

Recurrent fetal loss

Thrombocytopenia

Can be seen with SLE

Question 9
2.5 / 2.5 pts
Multiple Choice
What is the most specific test for diagnosing iron deficiency anemia?
Correct!

Ferritin

RBC

Total iron binding capacity

Hematocrit

Question 10
2.5 / 2.5 pts
Multiple Choice

Hemolytic anemias are characterized by each of the following except:

Premature destruction of red cells
Correct!

Decrease in erythropoiesis

Sickle cell disease and thalassemias are included

Bone marrow is hyperactive

Question 11
2.5 / 2.5 pts
Which of the following are potential causes of a sickle crisis in sickle cell anemia? Select **all** that apply.

Alkalosis
Correct!

Dehydration
Correct!

Cold exposure
Correct!

Physical exertion

Question 12
0 / 2.5 pts
Multiple Choice:

A 23-year-old African-American man with a history of severe lifelong anemia requiring many transfusions has nonhealing leg ulcers and recurrent periods of abdominal and chest pain. These signs and symptoms are most likely to be associated with which one of the following laboratory abnormalities?
Correct Answer

Sickle cells on peripheral blood smear

Loss of intrinsic factor
You Answered

Decreased erythropoietin

Decreased ferritin

Question 13
2.5 / 2.5 pts
Multiple Choice:

Which of the following is NOT true of vitamin B12 deficiency anemia?

Dietary deficiencies are not common

Peripheral neuropathy can be a result of deficiency

Vitamin B12 is bound to intrinsic factor
Correct!

MCV is decreased

Question 14
2.5 / 2.5 pts
Multiple Choice:

Each of the following are risk factors for secondary hyperlipidemia except?

Obesity

Diabetes mellitus

High cholesterol diet
Correct!

Autosomal dominant disorder of LDL receptor

Question 15
2.5 / 2.5 pts
Multiple Choice:

Risk factors for coronary heart disease include each of the following except:
Correct!

HDL > 60

Smoking

Hypertension

Family history of heart disease

Question 16
2.5 / 2.5 pts
Multiple Choice:

Risk factors for atherosclerosis include each of the following except:

Increasing age

Correct!

Female gender (pre-menopause)

Elevated CRP levels

Cigarette smoking

Question 17
8 / 10 pts
Matching: Match the cardiac procedures to their description and what they are best used for. 2 answers per question (1 from Set 1, and 1 from Set 2).

1. Cardiac catheterization
2. Exercise stress testing
3. Electrocardiography
4. Echocardiography

Set 1:
a. Records electrical potential differences during the cardiac cycle
b. Observes cardiac function under stress
c. Checks for structure and function of the heart
d. Catheter is inserted into the great vessels and chambers of the heart

Set 2:
a. Best to assess ventricular function and heart failure
b. Best to assess for arrhythmias and myocardial infarction
c. Best to assess need for coronary artery bypass graft and stenting
d. Best to assess suspected ischemic heart disease
Your Answer:
1. D, C
2. B, D
3. A, A
4. C, B
1. Set 1: d, Set 2: c

2. Set 1: b, Set 2: d

3. Set 1: a, Set 2: b

4 . Set 1: c, Set 2: a

Question 18
10 / 10 pts
Explain the differences in the pathophysiology, symptoms, and whether nitroglycerin and/or rest will relieve symptoms in **stable angina, unstable angina**, and **myocardial infarction**.
Your Answer:

In stable angina, with exertion, the vessels cannot properly vasodilate. This can cause chest pain, tightness or shortness of breath. Heart is stable at rest, but cannot keep up with the exertion demand. It is relieved with rest and/or use of nitroglycerin.
With increasing occlusion of the coronary vessel, the demands of the resting heart may become too great. Unstable agina is when patient has angina without exertion. Rest is insuffient, but can be releived with nitroglycerin.
If the plaque ruptures, complete occulsion can occur. This can lead to lack of oxygen to tissues in the heart and muscle can die. This is myocardial infarction. Chest pain unrelieved by rest, sharp pain down left arm, vomitting are signs of distress. Emergency/hospital interventions are needed.
With atherosclerotic disease, the coronary vessel lumens are narrowed and blood supply to the heart is diminished. With exertion, the vessels cannot adequately vasodilate. This can manifest as chest pain or tightness and/or shortness of breath.
Stable angina- The heart is stable at rest but cannot keep up with the demand of exertion. Stable angina typically has a >70% stenosis of the coronary arteries. It is relieved by rest or nitroglycerin (vasodilator).
Unstable angina- With increasing occlusion of the coronary vessel(s), the demands of the resting heart may become too great. When the patient experiences angina *without* exertion, or when the level of exertion necessary to cause anginal symptoms decreases, this is called unstable angina. It can be relieved by nitroglycerin, but not rest. Unstable angina means one or more coronary vessels is nearly totally occluded.
Myocardial infarction- If a plaque ruptures, coronary thrombosis can cause complete occlusion. If collateral flow is inadequate, the tissue supplied becomes ischemic. Without oxygen, a portion of the muscle can die. MI can present as chest pain unrelieved by rest, sometimes radiating down the left ram or into the jaw or neck, dyspnea, nausea/vomiting, sweating, and/or other signs of distress. Other symptoms include a crushing pain or like “something is sitting on my chest.” Women may present with weakness, fatigue, shortness of breath, or GI complaints. Symptoms are not relieved by nitroglycerin.

Question 19
10 / 10 pts
1. Name 2 lifestyle changes to prevent further progression of atherosclerotic diseases:

2. Name 2 medications used to treat someone with coronary artery disease and their mechanisms of action:
Your Answer:
1. Stop smoking and frequent exercise
2. ACE inhibitors prevent conversion of angiotensin I to angiotensin II, which decreases vasocontriction, aldosterone production, sodium and water retiention by the kidneys. Diuretics promote the excretion of fluids, reducing preload.
1. Reduction in fat intake, quitting smoking, weight loss, exercise

2. Aspirin or other platelet inhibitors are used to prevent thrombosis formation. Beta-blockers and calcium channel blockers (CCB) – both decrease the heart rate and contractile force – can be initiated to decrease the heart’s demand of oxygen. CCB also increase coronary vasodilatation and decrease coronary vasospasm. Nitrates are used to quickly dilate the coronary vessels. Nitrates also dilate veins, decreasing the heart’s work by decreasing preload and afterload.

Question 20
2.5 / 2.5 pts
Multiple Choice:

With increasing occlusion of the coronary vessel(s), the demands of the resting heart may become too great. When the patient experiences angina without exertion, or when the level of exertion necessary to cause anginal symptoms decreases, this is called what?

Stable angina
Correct!

Unstable angina

Myocardial infarction

Question 21
2.5 / 2.5 pts
Multiple Choice:

Which of the following is NOT a risk factor for hypertension?
Correct!

Increased potassium intake

Increased salt intake

Increased alcohol intake

Increased caloric intake

Question 22
2.5 / 2.5 pts
Multiple Choice:

Each of the following lifestyle modifications will help to decrease blood pressure except:

Losing weight

Increase fruits and vegetables
Correct!

3 drinks or more of alcohol

Limiting salt intake

Question 23
2.5 / 2.5 pts
Multiple Choice:

With atherosclerotic disease, the coronary vessel lumens are narrowed and blood supply to the heart is diminished. With exertion, the vessels cannot adequately vasodilate. This can manifest as chest pain or tightness and/or shortness of breath. What is this referred to as?
Correct!

Stable angina

Unstable angina

Myocardial infarction

Question 24
2.5 / 2.5 pts
Multiple Choice:

Which arrhythmia is the most common chronic arrhythmia and incidence increases with age?

Sinus bradycardia

Sinus tachycardia
Correct!

Atrial fibrillation

Atrial flutter

Question 25
2.5 / 2.5 pts
Fill in the blank:

The laboratory test that measures the volume of red cells in 100 mL of blood is _____.

Your Answer:
hematocrit
hematocrit

Question 26
2.5 / 2.5 pts
Fill in the blank:

_____ are a group of inherited disorders of hemoglobin synthesis common among Mediterranean populations.
Your Answer:
thalassemias
Thalassemias

Question 27
2.5 / 2.5 pts

Fill in the blank:

The drug most commonly associated with inhibition of platelet aggregation is _____.
Your Answer:
aspirin
aspirin

Question 28
10 / 10 pts

Patient is found to have the above:
What risk factors mostly led to this disease state?
What is this person at risk for developing?
What lifestyle modifications would you suggest for them?
Your Answer:
1. Smoking, poor diet, high cholesteral values, obesity, diabetes
2. Atherosclerosis
3. Stop smoking, exercise, dietary changes, reduce alcohol consumption
Answer: Picture is of an atherosclerotic plaque
Hyperlipidemia, cigarette smoking, obesity and visceral fat, hypertension, diabetes mellitus. Increasing age, family history of premature CHD, and male sex. May also include C-reactive protein (CRP) and serum lipoprotein(a).
Coronary artery disease, angina, myocardial infarction, aneurysm, stroke (ischemia, thrombosis, emboli).
Stop smoking, lose weight/exercise, healthy diet (low-fat, low-cholesterol), adhere to medication for blood pressure, hyperlipidemia, and/or diabetes.

MODULE 5
Question 1
2.5 / 2.5 pts
True/False:

Both carbon dioxide and oxygen are able to bind with hemoglobin.

Correct!

True

False

Question 2
2.5 / 2.5 pts
True/False:

Exercise, allergens, and emotion can all contribute to an asthma attack.
Correct!

True

False

Question 3
2.5 / 2.5 pts
The breathing rate is determined by input from _____ that monitor oxygen, carbon dioxide, and pH levels in the blood.
Your Answer:
chemorecpetors
chemoreceptors

Question 4
2.5 / 2.5 pts
The _____ are the actual sites of gas exchange between the air and blood.
Your Answer:
alveoli
alveoli

Question 5
2.5 / 2.5 pts
True/False:

Asthma is considered reversible airway bronchoconstriction.
Correct!

True

False

Question 6
2.5 / 2.5 pts
True/False:

Intrapleural pressure is always negative in relation to alveolar pressure in a normal inflated lung.

Correct!

True

False

Question 7
2.5 / 2.5 pts
True/False:

The accessory muscles are the main muscles of inspiration.

True
Correct!

False
diaphragm

Question 8
0 / 2.5 pts
True/False:

The FEV_1/ FVC ratio is decreased in restrictive lung disorders.
You Answered

True
Correct Answer

False

Question 9
5 / 5 pts
Fill in the blank:

The diaphragm is innervated by _____.
Your Answer:
the phrenic nerve, cervical nerves C3, C4, C5
C3, C4, C5

Question 10
5 / 5 pts
_____ is the flow of gases into and out of the alveoli of the lungs.
Your Answer:
ventilation
Ventilation

Question 11
1.5 / 2.5 pts

Which of the following cells contribute to airway inflammation in asthma? **Select all that apply.**
Correct!
☑
Eosinophils
Correct!
☑
Mast cells
Correct Answer
☐
Neutrophils
Correct Answer
☐
Leukotrienes
Correct!
☑
Lymphocytes

Question 12
2.5 / 2.5 pts
Multiple Choice:

Alpha-1 antitrypsin deficiency is most likely seen in which disease process?
○
Bronchial asthma
○
Chronic bronchitis
Correct!
◉
Emphysema
○
Bronchiectasis

Question 13
2.5 / 2.5 pts
Multiple Choice:

Histologically, chronic bronchitis would exhibit each of the following except:
Correct!
◉
Enlargement of the airspaces
○
Increase in goblet cells
○
Fibrosis of the bronchiolar wall
○

Hypertrophy of the submucosal glands

Question 14
2.5 / 2.5 pts
Multiple Choice:

Each of the following are TRUE of ARDS except:

Chest x-ray shows a “white-out”
Correct!

Presents with decreased respiratory rate

Decreased surfactant function

Increased capillary permeability

Question 15
10 / 10 pts
Short answer:

A 10-year-old boy who is having an acute asthma attack is brought to the ER. He is observed to be sitting up and struggling to breathe. His breathing is accompanied by use of accessory muscles, a weak cough, and audible wheezing sounds. His pulse is rapid and weak, and both heart and breath sounds are distant on auscultation. His parents relate that his asthma began to worsen after he developed a “cold,” and now he doesn’t get relief from his albuterol inhaler.
Explain the changes in physiologic function underlying his signs and symptoms.
Your Answer:
In asthma patients, the airways begin to narrow. COntact with a trigger, such as a cold virus, starts a cascade of inflammatory cells to cause epithelial injury, resulting in airway inflammation.
With the severe airway inflammation, patient is experiencing airway remodeling, development of specific structureal changes in the airway wall. This can cause fixed obstruction in asthma patients and not reversible with inhalers or bronchodilaters.
Recruitment of inflammatory cells from the bloodstream into the bronchial wall, where they directly attack the invading organisms and secrete inflammatory chemicals that are toxic to the organisms causes airway inflammation. Swelling of the bronchial wall, mucus secretion, constriction of the airway; bronchial hyper-responsiveness to stimuli causes airway obstruction or narrowing. *They may discuss on a cellular level as well:*
Upon a trigger, the cascade of neutrophils, eosinophils, lymphocytes, and mast cells cause epithelial injury. This causes airway inflammation, which further increases hyperresponsiveness and decreased airflow. Mast cells release histamine and leukotrienes. These cause major bronchoconstriction, inflammation, and mucus secretion. Mast cells can trigger multiple cytokine release, which causes more airway inflammation. The contraction of the airways and subsequent swelling leads to further airway obstruction.

Question 16
10 / 10 pts
Short answer:

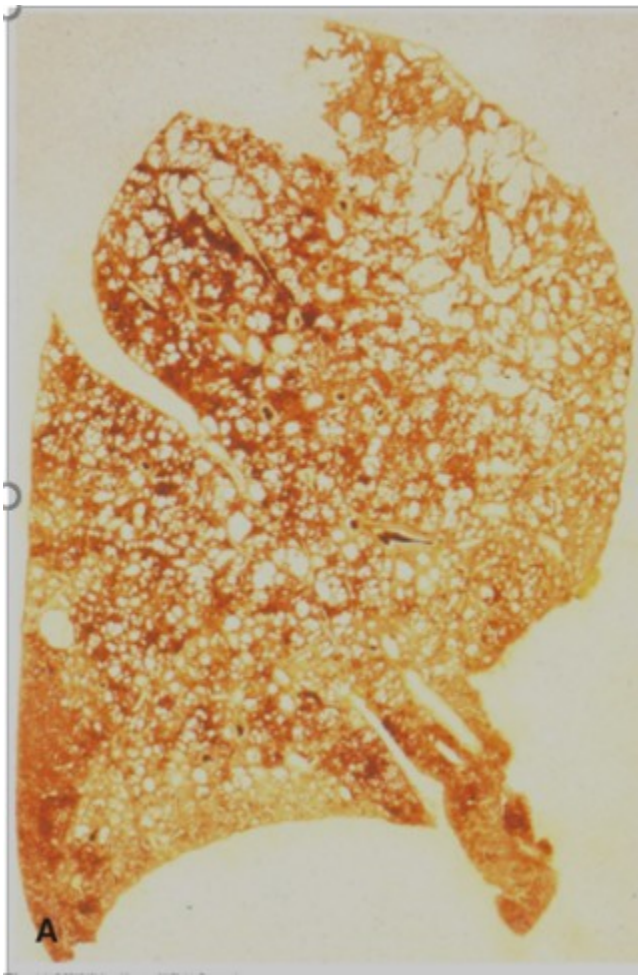
An 18-year-old woman is admitted to the ER with a suspected drug overdose. Her respiratory rate is slow (4-6 breaths/minute) and shallow. Arterial blood gases reveal a PCO_2 of 80 mm Hg and a PO_2 of 60 mm Hg.
What is the cause of this women's high PCO_2 and low PO_2?
Hypoventilation almost always causes an increase in PCO_2. Explain.
Your Answer:
The patient has decreased ventilation, impaired alveolar ventilation. This causes an increase in plasma PCO2 and decrease in PO2. She cannot expire the air at a normal rate resulting in accumulation of CO2.

Hypoventilation is when there is a reduced amount of air entering the lungs and alveoli. This results in decrease of oxygen and increase of CO2 in the blood. Breathing is often too shallow or too slow.

Respiratory acidosis; with a decreased respiratory rate, you are not exhaling enough carbon dioxide and it accumulates.

Question 17
10 / 10 pts
Short answer:
Explain why the oxygen flow rate for people with COPD is normally titrated to maintain the arterial PO_2 between 60 and 65 mm Hg.
Your Answer:
Those with oxygen therapy, its vital not to supplement with too much oxygen. The respirator center in the medulla has adapted to elevated CO2 levels, no longer responding to increases in PCO2. A decrease in PO2 becomes the stimulus for respiration. If oxygen is given at too high of rate, the respiratory drive and stimulus is supressed.
Their medullary respiratory center has adapted to the elevated CO_2 levels and no longer responds to increases in PCO_2. Therefore, a decrease in PO_2 becomes the stimulus for respiration. If oxygen is given at too high of a rate, it suppresses the stimulus and the respiratory drive.

Question 18
10 / 10 pts
Short answer:



1.) Your patient's lung showed the following: what is the only treatment that can delay the progression of this disease?

2.) Which is more soluble in plasma: carbon dioxide or oxygen?
Your Answer:
1) Smoking cessation only treatment that slows disease progression
2) Carbon Dioxide
1.) smoking cessation

2.) Carbon dioxide

Question 19
5 / 5 pts
Short answer

Some people have the triad of asthma, chronic rhinosinusitis, and nasal polyps. They have asthma attacks in response to taking what medication(s)?
Your Answer:
aspirin and other NSAIDs
Aspirin and other NSAIDs

Question 20
5 / 5 pts
Multiple Choice:

Each of the following can lead to atelectasis except:

Pleural effusion

Tumor mass
Correct!

Thrombus

Mucous plug

Question 21
5 / 5 pts
Multiple Choice:

Each of the following are helpful treatments for COPD patients except:

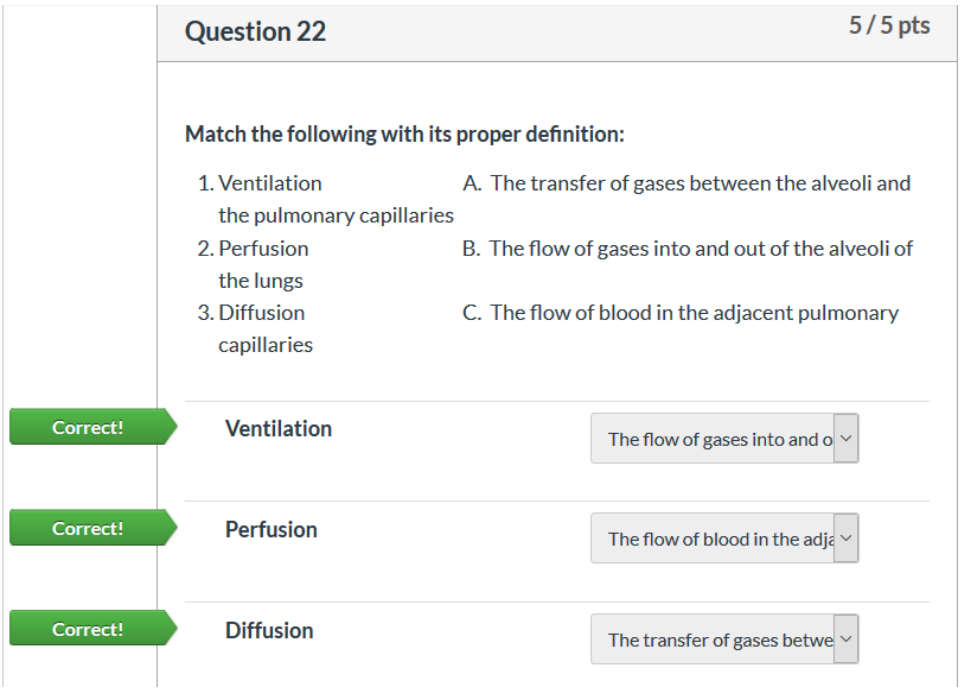
Oxygen therapy

Bronchodilators
Correct!

Anticoagulants

Pneumococcal vaccination

Influenza vaccination



MODULE 6
Question 1
2.5 / 2.5 pts
Multiple Choice:

A patient has experienced a seizure affecting the left temporal lobe. The family reports that the patient exhibited repetitive lip smacking and hand rubbing followed by a period of great fear and insecurity. They have experienced which type of seizure?

Focal seizure without impairment of consciousness or awareness
Correct!

Focal seizure with impairment of consciousness or awareness

Generalized tonic/clonic seizure

Question 2
2.5 / 2.5 pts
Multiple Choice:

A patient is having difficulty tracking their eye laterally. Which cranial nerve is affected?

CN II.

CN III.

CN IV.

Correct!

CN VI.

Question 3
2.5 / 2.5 pts
Multiple Choice:

You are seeing a patient with Parkinson's disease in your office. You notice they are repetitively rubbing their right thumb and forefinger. This is an example of what physical manifestation of the disease?
Correct!

Pill-rolling

Cogwheeling

Bradykinesia

Rigidity

Question 4
2.5 / 2.5 pts
Multiple Choice:

Sleep spindles are characteristic of which stage of sleep?

Stage 1
Correct!

Stage 2

Stage 3

Stage 4

Question 5
2.5 / 2.5 pts
Multiple Choice:

A person reports feelings of worthlessness and guilt as well as difficulty sleeping. As they are speaking, you notice a repetitive, accentuated blinking of their eyes. What type of depression are they experiencing?

Melancholic depression

Atypical depression

Depression with psychotic features
Correct!
Depression with catatonic features

Question 6
2.5 / 2.5 pts
Multiple Choice:

Each of the following statements is true regarding the organization of the nervous system except:
The PNS has an afferent and efferent division
Correct!
The somatic nervous system can be further divided into the sympathetic and parasympathetic divisions
The CNS contains the hindbrain, midbrain, and forebrain
The PNS contains the cranial nerves

Question 7
2.5 / 2.5 pts
Multiple Choice:

Each of the following statements is true regarding Alzheimer's disease except:
Correct!
Neurofibrillary tangles are a result of an abnormal accumulation of amyloid in the blood vessels
Neuritic plaques are composed of deteriorating nerve pieces that arrange themselves around a sticky protein core called amyloid beta (Aβ)
Cerebral amyloid angiopathy contributes to the pathogenesis of Alzheimer's disease

Question 8
2.5 / 2.5 pts
Multiple Choice:

Each of the following are modifiable behaviors related to stroke except:
Obesity
Smoking
Correct!

Hypercholesteremia

Immobility

Question 9
2.5 / 2.5 pts
Multiple Choice:

Adjustment insomnia is characterized by each of the following except:
Correct!

More than 30 days of insomnia symptomology

Disrupted sleep is in response to physical or emotional stressor

Resolves on its own once an adjustment is made/stressor is removed

Question 10
2.5 / 2.5 pts
Multiple Choice:

A “drop attack” is another term for which type of seizure?

Myoclonic seizure

Clonic seizure

Tonic seizure
Correct!

Atonic seizure

Question 11
2.5 / 2.5 pts
Multiple Choice:

Narcolepsy appears to be linked to an abnormal regulation of which stage of sleep?

stage 1

stage 2

stage 4
Correct!

REM

Question 12
2.5 / 2.5 pts
Multiple Choice:

Each of the following statements is true of Parkinson's disease except:
Correct!

Environmental factors alone lead to disease development

It affects the substantia nigra of the brain

It is characterized by a loss of dopaminergic neurons

Incidence increases with age

Question 13
2 / 2 pts
Fill in the blank:

Efferent neurons deliver _____ input from the CNS to the periphery.
Your Answer:
motor
Answer: Motor

Question 14
2 / 2 pts
Fill in the blank:

_____ work by blocking membrane receptors and the subsequent reuptake of serotonin and norepinephrine.
Your Answer:
Tricyclic antidepressants, TCAs
Answer: Tricyclic antidepressants (TCAs)

Question 15
2 / 2 pts
Fill in the blank:

_____ is sleep disordered breathing due to the brain not properly signaling the respiratory muscles.
Your Answer:
Central sleep apnea
Answer: Central sleep apnea

Question 16
2 / 2 pts
Fill in the blanks:

The aim of drug therapy used for Parkinson's disease is to increase _____ neuron activity or decrease _____ neuron activity.

Your Answer:
dopaminergic, cholinergic
Answer: dopaminergic, cholinergic

Question 17
2 / 2 pts
Fill in the blank:

Connective tissue sheaths that surround the brain and spinal cord providing protection are called the _____.
Your Answer:
meninges
Answer: Meninges

Question 18
5 / 5 pts
T/F – Make true if False

Oligodendrocytes produce myelin in the PNS.
Your Answer:
False
Answer: False, oligodendrocytes produce myelin in the CNS.

Question 19
5 / 5 pts
T/F – Make true if False

The average age of onset for major depressive disorder is mid-30s; however, the age of onset is increasing in recent times.
Your Answer:
False
Answer: False, the age of onset is decreasing in recent times.

Question 20
5 / 5 pts
T/F – Make true if False

Brain activity is decreased during REM sleep.
Your Answer:
False
Answer: False, brain activity is increased during REM sleep.

Question 21
5 / 5 pts
T/F – Make true if False

Complete dependence for activities of daily living is characteristic of severe Alzheimer's disease.
Your Answer:

True
Answer: True

Question 22
5 / 5 pts
Short Answer Essay

Explain the mechanism of electric synapses and how they contribute to the rapid propagation of an action potential.
Your Answer:
Electric synapses allow the passage of the current through openings called gap junctions. Gap juntions penetrate the junctions of neighboring cells, which allows the current to move in either direction. This results in the ability of the action potential to move rapidly from neuron to neuron.
Answer: Electrical synapses allow the passage of current-carrying ions through small openings called gap junctions. These gap junctions penetrate the cell junction of neighboring cells allowing current to flow in either direction.

Question 23
5 / 5 pts
Short Answer Essay

You are babysitting a 7-year-old child with a known history of seizure activity. You notice they appear flushed and seem unresponsive. You ask if they are feeling alright and they stare at you blankly. After a few seconds they act as if nothing happened and return to play. Is this a generalized or focal seizure? Based upon this description, what specific type of seizure did this individual experience?
Your Answer:
The specific type of seizure described is an absence seizure, which is considered a subcategory of generalized seizures.
Answer: Generalized, Absence seizure

Question 24
5 / 5 pts
Short Answer Essay

Describe the importance of brain activity that occurs during REM sleep.
Your Answer:
During REM sleep, internalized sensory are stimulated which allows formed memories to replay. REM sleep is necessary for normal physiolgic and psychologic functioning during wake times. REM deprivation can lead to anxiety, decreased concentration, and behavioral changed.
Answer: During this phase of sleep, incoming sensory input is blocked; the brain cannot process it. However, internalized sensory tracts are stimulated allowing previously formed memories to replay in one's mind. Studies have shown that adequate time spent in REM sleep is necessary for normal physiologic and psychologic functioning during periods of wakefulness.

Question 25
5 / 5 pts
Short Answer Essay

A patient reports to the emergency department where you are working at 10 pm. They report that earlier in the day beginning at approximately 9 am they began to experience tingling in their right arm. They decided to ignore it thinking it was probably a result of all the gardening they did the day before. As the

day went on, the tingling sensation got worse, and they started to have difficulty speaking. The patient's spouse reported that they were slurring their words. Past medical history includes a diagnosis of diabetes and hypercholesteremia. By the time they are evaluated, their symptoms start to subside. The tingling disappears and their speech returns to normal. What do you suspect this patient has experienced? What evidence is there to support that diagnosis?

Your Answer:
The patient experienced a TIA, transient ischemic attack, or mini stroke. The patient's symptoms, tingling sensation, slurred speech, difficulty speaking, are signs of a stroke. However, with TIA, the symptoms/signs, will resolve within 24 hours. The patient's medical history of diabetes and hypercholesteremia also are risk factors for stroke.
Answer: This patient has experienced a TIA. They have experienced symptoms consistent with oxygen deprivation to the brain, however their symptoms subsided within 24 hours of their onset.

Question 26
10 / 10 pts
Long Answer Essay

A 75-year-old male is brought to the emergency department via ambulance at 5 pm. The patient's spouse reports that when they woke up (approximately at 6 am) he reported to her that he was having some blurred vision but decided to go about his day. As the day progressed, he started experiencing tingling and feelings of weakness on the entire left side of his body. He has a past medical history of diabetes. Based upon these symptoms and past medical history, what do you suspect this patient is experiencing? How would you confirm this diagnosis? What treatment should be administered? Explain why you chose that treatment.
Your Answer:
This patient is experiencing a stroke. A CT scan and MRI will be ordered to determine the type of stroke and rule out possible other disorders. A vasular image will be done to determine source of the block. Since its been over 4 hours since symptom onset, the window to safely administer tPA has passed. A catheter based method is necessary. This will mechanically break the clot and deliver drugs directly to the clot itself. A stent might be place as well.
Answer: This patient is more than likely experiencing an ischemic stroke. A CT scan and MRI would be needed to determine if a clot was blocking blood flow to the brain tissue and to rule out a hemorrhagic stroke. If a clot is found, this patient would need to be re-perfused through catheter-base methods as they are outside of the 3-4.5 treatment window for the use of tPA drugs.

Question 27
10 / 10 pts
Long Answer Essay

A patient is being seen in your office with a primary complaint of daytime fatigue that has lasted for the past 2 months. They go on to tell you that they are having difficulty with work performance and are constantly on edge. You suspect they have chronic insomnia. What are the 4 primary symptoms of insomnia? Describe a nonpharmacologic treatment plan that you can prescribe for this patient.
Your Answer:
The 4 symptoms are:
DIfficulty initiating sleep
Difficulty maintaining sleep
Waking up too early
Chronic nonrestorative (poor)sleep

For a primary insomnia diagnosis, patient must exhibit at least 3 symptoms from the list above and at least one sympton during wake hours, such as poor work performance and irritability. Nonpharmacologic treatment will be patient education and good sleep hygiene, sleep habits. This includes a comfortable sleeping environmnet, going to bed at the same time each night, avoid caffeine or other stimulants several hours prior to bedtime, avoidance of screens before bed.

Answer: The 4 primary symptoms of insomnia are:
Difficulty initiating sleep
Difficulty maintaining sleep
Waking up too early
Chronic nonrestorative or poor sleep
You would educate the patient on proper sleep hygiene and encourage them to evaluate possible stressors that may need to be removed from their daily routine. Sleep hygiene involves the establishment of consistent sleep patterns (going to bed at the same time each night and only sleeping as long as one needs to feel refreshed during the day), creating a comfortable sleeping environment (optimal room temperature), avoidance of screens and excessive light right before bed, and finally, avoidance of stimulants (caffeine) several hours prior to normal bedtime.

MODULE 7

Question 1
5 / 5 pts
Multiple choice
The liver is responsible for each of the following EXCEPT:

Producing bile

Stores vitamins and minerals
Correct!

Releases insulin

Synthesizes protein

Question 2
5 / 5 pts
Multiple Choice:

Complications of gallstones include each of the following EXCEPT:
Correct!

Cirrhosis

Biliary obstruction

Pancreatitis

Cholecystitis

Question 3
5 / 5 pts
Multiple choice:

Treatments for gastroesophageal reflux include each of the following EXCEPT:

Losing weight

Sleeping with head elevated
Correct!

Caffeinated beverages

Proton pump inhibitors

Question 4
5 / 5 pts
What symptoms of irritable bowel syndrome would require further investigation? **Select all that apply.**
Correct!

Blood in stool
Correct!

Weight loss

Nausea and anorexia

Bloating
Correct!

Anemia

Question 5
5 / 5 pts
Multiple choice

Risk factors for the development of peptic ulcer include each of the following EXCEPT:

pylori infection

Family history of PUD

NSAID use

Alcohol use
Correct!
Stress

Question 6
5 / 5 pts
Multiple Choice

Gastric ulcers are worsened by _____. Duodenal ulcers are worsened by _____.
Correct!
A. Eating; not eating
B. Not eating; eating
C. Both a & b
D. None of the above

Question 7
5 / 5 pts
Multiple choice

Each of the following are characteristics of ulcerative colitis EXCEPT:
Correct!
Granulomatous lesions
Bloody diarrhea
Pseudopolyps
Risk of toxic megacolon
Crypt abscess formation

Question 8
5 / 5 pts
Multiple Choice

Each of the following are characteristics of Crohn disease EXCEPT:
Fistulas and strictures

Abscesses

Skip lesions

Cancer development is rare
Correct!

Bloody diarrhea

Question 9
2.5 / 2.5 pts
Fill in the blank:

The _____ prevents feces from going back into the ileum.
Your Answer:
ileocecal valve
Answer: ileocecal valve

Question 10
2.5 / 2.5 pts
True/False:

The GI tract produces both enzymes and hormones.
Correct!

True

False

Question 11
2.5 / 2.5 pts
Fill in the blank:

The double-layered fold of peritoneum that hangs down from the stomach to adjacent organs is called what?
Your Answer:
omentum
Answer: omentum

Question 12
2.5 / 2.5 pts
Fill in the blank:

What type of cell secretes hydrochloric acid in the stomach?
Your Answer:
parietal cells
Answer: Parietal cells

Question 13
2.5 / 2.5 pts
Short answer:

What are the intermittent contractions that help to mix and move food along?
Your Answer:
Rhythmic movements
Answer: Rhythmic movements

Question 14
2.5 / 2.5 pts
True/False

Activation of the sympathetic nervous system increases amplitude of the slow waves.

True
Correct!

False

Question 15
2.5 / 2.5 pts
Short Answer:

_____ lies between the mucosal and muscle layers of the intestinal wall, and is involved with controlling secretions, absorption, and contraction of each segment of the intestinal tract.
Your Answer:
Submucosal plexus
Answer: Submucosal (Meissner) plexus

Question 16
2.5 / 2.5 pts
Short answer:

What is it called when there is abnormally fast emptying of hyperosmotic gastric secretions?
Your Answer:
Dumping syndrome
Answer: Dumping syndrome

Question 17
5 / 5 pts
Short answer

Which GI hormone has strong growth hormone-releasing activity and stimulates food intake and digestive function?
Your Answer:
Ghrelin
Answer: Ghrelin

Question 18
5 / 5 pts
Short answer:

Which GI hormone inhibits gastric acid secretion?
Your Answer:
Secretin
Answer: Secretin

Question 19
5 / 5 pts
True/False:

Anti-diarrheal medication can be used with all types of diarrhea.

True
Correct!

False

Question 20
5 / 5 pts
Fill in the blank:

Consistently ignoring the urge to defecate can result in _____.
Your Answer:
constipation
Answer: constipation

Question 21
0 / 5 pts
Multiple Choice:

Clinical manifestations of cirrhosis include each of the following EXCEPT:

Splenomegaly
Correct Answer

Choledocholithiasis

Portal hypertension
You Answered

Coagulation factor deficiencies

Encephalopathy

Question 22

5 / 5 pts
Short Answer:

What is now the most common cause of chronic liver disease in the Western world?
Your Answer:
Nonalcoholic fatty liver disease, NAFLD
Answer: Nonalcoholic fatty liver disease (NAFLD)

Question 23
5 / 5 pts
Short Answer:

Cholelithiasis would be an example of what type of jaundice?
Your Answer:
Posthepatic
Answer: Posthepatic jaundice

Question 24
5 / 5 pts
Short Answer:

Excessive red blood cell destruction would cause what type of jaundice?
Your Answer:
Prehepatic
Answer: Prehepatic jaundice

MODULE 8
Question 1
2.5 / 2.5 pts
Each of the following statements are true regarding control over the GFR except:

The kidney can maintain a constant GFR despite variations in the arterial blood pressure of the rest of the body.

The sympathetic nervous system can supersede the renal autoregulatory system.
Correct!

The RAA responds when blood pressure rises above normal limits.
The RAA responds when blood pressure drops below normal limits.

Question 2
2.5 / 2.5 pts
Which of the following statements is false regarding ADH?

Elevated levels of ADH will lead to a small volume of concentrated urine.
Correct!

Elevated levels of ADH will lead to dilute urine.

decreased levels of ADH will lead to dilute urine.

Alcohol inhibits ADH.

Question 3
2.5 / 2.5 pts
Which of the following statements is true regarding nephrons?

It is divided into an outer medulla and an inner cortex

It has 1 source of blood supply
Correct!

The glomerulus filters the blood while the tubule reabsorbs needed nutrients

Question 4
0 / 2.5 pts
Low Na^+ levels in the plasma and interstitial compartment is characteristic of which of the following fluid imbalances?
You Answered

Dehydration
Correct Answer

Water intoxication

Edema

Question 5
2.5 / 2.5 pts
Reabsorption in the PCT is characterized by the following except:

Na+ and water are reabsorbed in equal proportions
Correct!

Glucose and amino acids are minimally reabsorbed in the PCT
glucose and amino acids are almost completely reabsorbed in the PCT

Sodium, chloride, potassium, and bicarbonate are 65%-80% reabsorbed from the filtrate

Question 6
2.5 / 2.5 pts
Which of the following is/are true regarding acid-base balance? **(mark all that apply)**
Correct!

Acid-base balance refers to the balance of the concentration of hydrogen ions (H+) in the blood

Acid-base balance refers to the balance of the concentration of bicarbonate ions (OH-) in the blood

Venous blood is characterized by a more alkaline pH
Correct!

A higher concentration of H+ ions will decrease the pH of the blood

Question 7
2.5 / 2.5 pts
Acute postinfectious glomerulonephritis is characterized by the following except:

Typically caused by a streptococcal infection
Correct!

Associated with a poor prognosis as it often leads to CKD
the prognosis is good when underlying cause is treated

Accompanied by glomerular enlargement and hypercellularity

Oliguria is often the first symptom

Question 8
2.5 / 2.5 pts
Which of the following is characteristic of acute transplant rejection?

Occurs months to years after transplant
Correct!

Involves increased T lymphocytes

It does not respond well to immunosuppressive therapy

Question 9
0 / 2.5 pts
Which of the following is true of 25-hydroxycholecalciferol?
You Answered

It is the inactive form of vitamin D taken in through the skin via UV rays

It is the inactive form of synthetic vitamin D
Correct Answer

It is the active form of vitamin D, converted in the liver

It is the active form of vitamin D, converted in the kidney

Question 10
2.5 / 2.5 pts
A patient is said to be in stage 4 kidney disease. What would you expect their GFR to be?
A. 25 mL/min/1.73m^2
B. 42 mL/min/1.73m^2
C. 70 mL/min/1.73m^2
D. 14 mL/min/1.73m^2
Correct!
(•)
A.
( )
B.
( )
C.
( )
D.

Question 11
2.5 / 2.5 pts
The following are true regarding tubular secretion except:
Correct!
(•)
K+ is secreted in the intercalated cells
K^+ is secreted in the principal cells
( )
H+ along with organic acids and bases are secreted from the proximal tubule
( )
Involves the elimination of urea from the filtrate

Question 12
2.5 / 2.5 pts
Dilation of the afferent arterioles is achieved through the action of which of the following?
Correct!
(•)
Cardiovascular baroreceptors
( )
Aldosterone
( )
Diuretics

Question 13
Not yet graded / 2 pts
Fill in the blank:

The outer portion of the kidney that houses the glomeruli and convoluted tubules is called the _____.
Your Answer:
outer cortex
Answer: renal cortex

Question 14
Not yet graded / 2 pts
Fill in the blank:

The formation of erythropoietin is preceded by low levels of _____.
Your Answer:
oxygen in the tissues
Answer: oxygen

Question 15
Not yet graded / 2 pts
Fill in the blank:

The _____ has the largest impact on pH control.
Your Answer:
kidney
Answer: renal control mechanism

Question 16
Not yet graded / 2 pts
Fill in the blank:

A person who has a blood Mg2+ concentration of 3.3 mg/dL. Is considered to have _____.
Your Answer:
hypermagnesemia
Answer: hypermagnesemia

Question 17
Not yet graded / 2 pts
Fill in the blank:

_____ failure is caused by conditions that damage the structures within the kidney.
Your Answer:
renal
Answer: Intrarenal

Question 18
Not yet graded / 5 pts
T/F, if False make the statement True

Angiotensin I is converted to **angiotensin II** in the kidneys.
Your Answer:
False. Angiotensin I is converted to angiotensin II in the lungs
Answer: False, angiotensin I is converted to angiotensin II in the lungs.

Question 19

Not yet graded / 5 pts
T/F, if False make the statement True

Hyperkalemia can be caused by movement of K+ from the ECF to the ICF compartment.
Your Answer:
False. Caused by the movement of K+ from the ICF to ECF compartment.
Answer: False, hyperkalemia can be cause by the movement of K+ from the ICF to the ECF compartment.

Question 20
Not yet graded / 5 pts
Short Answer:

Explain why renal flow is decreased with sympathetic activity.
Your Answer:
Renal flow is decreased when there is an increase sympathetic activity. This is due to the afferent vasocontriction.
Answer: Sympathetic activity diverts blood to the heart, brain, and skeletal muscles. During these times the renal autoregulatory system may be superseded by nervous system control. In this event, a narrowing of the afferent arteriole is caused by sympathetic nerve fibers followed by a release of epinephrine from the adrenal medulla which leads to a subsequent decrease in renal flow and the GFR.

Question 21
Not yet graded / 5 pts
Short Answer:

A patient's plasma Ca2+ levels are 11.0 mg/dL. Given these levels, list a symptom affecting the GI tract they may experience and explain why it would be occurring.
Your Answer:
A GI symptom is constipation. This would occur due to the decrease in neural excitability and decrease in smooth muscle activity.
Answer: The patient has hypercalcemia. Constipation, nausea, and/or vomiting may result secondary to a decrease in smooth muscle activity.

Question 22
Not yet graded / 5 pts
Short Answer:

A patient has a diagnosis of glomerular disease. Given what you know about the structural framework of the glomerular capillaries, what would be detected in this patient's urine, and explain why this would happen.
Your Answer:
Protein and blood will be detected in the the urine. This happens due to the increased permeability of the glomerular capillary wall.
Answer: Blood and protein may be present in the urine. Spaces within the basement membrane of the glomerular capillaries, under normal circumstances prevent red blood cells and plasma proteins from passing through the glomerular membrane into the filtrate. The disease process would compromise this.

Question 23

Not yet graded / 5 pts
Short Answer:

A patient with chronic kidney disease must undergo dialysis treatments as they wait for transplantation. Give 1 reason peritoneal dialysis would be preferable to the patient over hemodialysis and 1 concern in choosing peritoneal dialysis over hemodialysis.
Your Answer:
Peritoneal dialysis can be prefered because it can be done at the patient's home.
A concern of choosing peritoneal dialysis is the risk for infection at the catheter exit site.
Answer: Peritoneal dialysis can be done in the patient's home as opposed to going to a dialysis clinic multiple times per week. A major concern of the utilization of peritoneal dialysis is the risk for infection at the catheter site.

Question 24
Not yet graded / 10 pts
A patient presents to the emergency department with complaints of sharp pain that comes in waves in the upper lateral quadrant of the abdomen. Their skin is clammy, and they have been experiencing nausea and vomiting all day long. They have a past medical history of hyperparathyroidism. Urinalysis reveals calcium in their urine. A CT scan is ordered, and it reveals a stone 6 mm in diameter. What type of renal calculi do you suspect? What treatment is needed? Explain your reasoning for both answers.
Your Answer:
Calcium stones is suspected because of increased calcium levels in urine and history of hyperparathyroidism. Since the stone is 6mm, it may not pass on its own. Ureteroscopic removal may be required. This allows the ureter to be dilated, giving the physician ability to remove the stone.
Answer: The patient has a calcium stone given their past medical history and the findings of calcium in their urine. The stone will be unable to pass on its own given the diameter greater than 5 mm. It can be removed through ureteroscopic removal or extracorporeal shockwave lithotripsy. The patient may also be put on medication for pain management.

Question 25
Not yet graded / 10 pts
A patient presents in the emergency department with severe dehydration secondary to vomiting. The following are the results of their blood work: pH = 8.2, PCO_2 = 39 mm, and HCO_3^- = 33 mEq/L. Based upon these results, what type of acid-base disorder are they experiencing? Is compensation occurring? Describe a treatment intervention for this disorder. Normal values are as follows: pH = 7.35-7.45, PCO_2 = 35-45 mm, HCO_3^- = 22-26 mEq/L.
Your Answer:
Metabolic alkalosis. Respiratory compensation is occuring. Treatment is fluid replacement with normal saline solution.
Answer: The patient is in metabolic alkalosis. The respiratory system is not compensating as PCO_2 compensation falls within normal limits. Fluids are replaced with normal saline solution.

Question 26
Not yet graded / 10 pts
A patient is in the ICU following open heart surgery. The patient was feeling well earlier in the day, but suddenly began to demonstrate signs of confusion and disorientation. Blood results reveal Na^+ = 100 mEq/L. Based upon these symptoms and results of blood work, what electrolyte imbalance is this patient experiencing? What treatment is indicated for this imbalance?
Your Answer:
Patient is experiencing euvolemic hypotonic hyponatremia. Treatment is administering saline solution.

Answer: This patient is experiencing euvolemic hypotonic hyponatremia. The administration of intravenous saline solution would be indicated to correct the sodium deficiency.

MODULE 9

Question 1
0 / 5 pts
Multiple Choice

If a patient is taking exogenous forms of corticosteroid hormones, what would their labs show?
You Answered

High levels of ACTH
Correct Answer

Low levels of ACTH

Hyperkalemia

None of the above

Question 2
5 / 5 pts
Multiple Choice:

The following are common signs and symptoms of Cushing syndrome EXCEPT:
Correct!

Hypoglycemia

Mood changes

Muscle weakness

Amenorrhea

Question 3
5 / 5 pts
Multiple Choice:
Primary adrenocortical deficiency (Addison's disease) is most frequently caused by:
Correct!

Autoimmune mechanisms

Infection

Metastatic tumor

Trauma

Question 4
0 / 5 pts
Multiple Choice:

Addison’s disease is due to which of the following:
Correct Answer

Adrenal gland dysfunction

Decreased ACTH stimulation from the pituitary

Decreased CRH from the hypothalamus
You Answered

All of the above

None of the above

Question 5
0 / 2.5 pts
An autocrine action occurs when a hormone exerts an action on the cells that produced it.
Correct Answer

True
You Answered

False

Question 6
2.5 / 2.5 pts
A paracrine hormone is a hormone that produces a biologic action on the cell that released them.

True
Correct!

False

Question 7
2.5 / 2.5 pts
Hormones work through receptors, and the speed of this action varies.
Correct!

True

False

Question 8
2.5 / 2.5 pts
The production and release of hormones by the hypothalamus requires stimulation by the pituitary gland.

True
Correct!

False

Question 9
5 / 5 pts
What hormone affects nutrient metabolism, regulates blood glucose levels, and has anti-inflammatory actions?

Insulin
Correct!

Cortisol

Glucagon

T3, T4

Question 10
5 / 5 pts
The anterior pituitary releases which of the following hormones? **Select all that apply.**
Correct!

TSH

Calcitonin
Correct!

FSH
Correct!

LH

Somatostatin

Question 11
5 / 5 pts

Type 1 diabetes mellitus is associated with each of the following characteristics EXCEPT:

Markedly reduced beta cell mass

Markedly reduced circulating insulin level
Correct!

Gradual, subtle onset

Usually normal body weight

Question 12
5 / 5 pts
Each of the following are characteristics of diabetes mellitus EXCEPT:

Delayed gastric emptying

Bladder infections
Correct!

Myxedema

Glaucoma

Question 13
2 / 2 pts
Of all the people with diabetes, approximately 70% have type 2 diabetes.

True
Correct!

False
False (90%)

Question 14
2 / 2 pts
Insulin promotes glycogenesis and glycolysis.
Correct!

True

False

Question 15
2 / 2 pts
Most hormones are controlled through positive feedback.

True
Correct!
False

Question 16
2 / 2 pts
Type 2 diabetics can improve hyperglycemia with weight loss.
Correct!
True
False

Question 17
2 / 2 pts
Hemoglobin A1C measures glucose control over the previous 6 months.
True
Correct!
False

Question 18
Not yet graded / 5 pts
A 45-year-old obese, sedentary male has recently been diagnosed with type 2 diabetes. What are 2 strategies to help him normalize his blood sugars? List 2 other macrovascular complications he is at risk for and how you would screen for them?
Your Answer:
Proper heart healthy diet and exercise, which can lead to weight loss can help blood sugars. Certain medications can help as well.
2 macrovascular complications are coronary artery disease and stroke. Risk factors for macrovascular disease is hyperglycemia and hyperlipidemia. A fasting glucose test and A1C test is used to measure blood glucose and glucose control respectivly.
Answer: (1) Diet, exercise, and weight loss may be all that they need to control blood glucose levels. Even moderate weight loss of 5-10% of total body weight has been shown to improve glucose control. (2) Hypertension and hyperlipidemia – checking blood pressure and screening with a serum lipid panel.

Question 19
Not yet graded / 5 pts
Why are foot ulcers such a big problem with diabetics?
Your Answer:
Foot ulcers are common in those with neuropathy. Its a big problem because these infections cannot be undetected due to the loss of sensation and pain.
Answer: Trauma or infection may be present, but undetected due to the loss of sensation and pain. It is worsened by vascular insufficiency and the decreased ability to heal.

Question 20
5 / 5 pts
Symptoms of diabetic ketoacidosis (DKA) include each of the following EXCEPT:

Polydipsia

Dehydration

Fruity smell on the breath
Correct!

Bradycardia

Question 21
5 / 5 pts
A 40-year-old woman presents with amenorrhea and weight loss despite increased appetite. The history and physical exam show exophthalmos, tachycardia, and warm, moist skin. Each of the following lab abnormalities are expected EXCEPT:

Increased T4

Increased T3
Correct!

Increased TSH

Increased radioactive iodine uptake

Question 22
Not yet graded / 10 pts
People with diabetes should be followed closely by their health care provider to monitor glycemic control and be screened regularly for complications. List 5 ways they should be screened:
Your Answer:
Check weight, blood pressure, fasting blood glucose and A1C, lipid profile, foot exam
Answer: Checking weight, blood pressure, fasting blood glucose and hemoglobin A1C, lipid profile, serum creatinine, microalbumin, foot exam, dilated eye exams, and dental exam.

Question 23
Not yet graded / 2.5 pts
_____ is defined as a blood glucose of <60 mg/dL, with associated cognitive impairment.
Your Answer:
hypoglycemia
Answer: Hypoglycemia

Question 24
Not yet graded / 2.5 pts

A _____ test to assess sensation, vascular status, and skin integrity, should be administered annually on all diabetic patients.
Your Answer:
monofilament
Answer: monofilament

Question 25
Not yet graded / 2.5 pts
____ ____ ____ is diagnosed by hyperglycemia (blood glucose >500 mg/dL), hyperosmolarity, and dehydration, without ketoacidosis.
Your Answer:
hyperosmolar hyperglycemic state
Answer: Hyperosmolar hyperglycemic state (HHS)

Question 26
Not yet graded / 2.5 pts
____ is an oral antidiabetic drug that does not cause hypoglycemia and has a side effect of weight loss.
Your Answer:
metformin
Answer: Biguanides or metformin

MODULE 10
Question 1
2.5 / 2.5 pts
Multiple Choice:

Each of the following are true of gout except:
Correct!
- (•) Uric acid dissolves readily in synovial fluid
- ( ) Typically occurs at the first metatarsophalangeal joint
- ( ) Anyone can get gout
- ( ) Uric acid is a byproduct of purine metabolism

Question 2
2.5 / 2.5 pts
Multiple Choice:

Which of the following would a patient likely report if you suspect they have OA?
- ( ) Stiffness in the morning that lasts longer than 30 minutes
- ( ) Pain that is alleviated with activity

Correct!

A “grinding feel” with movement

Pain in their MCP joint

Question 3
2.5 / 2.5 pts
Which of the following are true regarding synovial joints? **(mark all that apply)**

Ball and socket joints are characterized by limited range of motion
Correct!

Condyloid joints allow gliding of irregular joint surfaces
Correct!

They are freely moving

The synovium lines articulating surfaces of the joint
Correct!

The synovium surrounds the joint margins

Question 4
2.5 / 2.5 pts
Multiple Choice:

Cancellous bone receives its blood supply by what means?

Arteries branching from the medullary cavity

Arteries branching inward from the periosteal arteries
Correct!

Diffusion through the endosteal surface of the bone and the canaliculi

Question 5
0 / 2.5 pts
Multiple Choice:

Which of the following drugs is most commonly prescribed to treat osteoporosis?

Raloxifene
Correct Answer

Alendronate
You Answered

Calcitonin

Question 6
2.5 / 2.5 pts
Multiple Choice:

Which of the following cells when stimulated by bone morphogenic proteins (BMPs) differentiate to contribute to normal bone growth?

Osteocytes

Osteoclasts

Osteoblasts
Correct!

Osteoprogenitor cells

Question 7
2.5 / 2.5 pts
Multiple Choice:

Which of the following are true of articular cartilage?

Proteoglycans of the extracellular matrix resist compression forces

Polypeptide chains give form and tensile strength

Interstitial osmotic pressure and available fluid contribute to joint lubrication
Correct!

a. b. and c. are all true

a. b. and c. are all false

Question 8
2.5 / 2.5 pts
Multiple Choice:

A patient has low serum calcium levels. Which of the following is true given this scenario?

The thyroid gland will secrete PTH to return serum calcium levels to normal

The thyroid gland will secrete calcitonin to return serum calcium levels to normal
Correct!

PTH will increase renal reabsorption of calcium while simultaneously increasing renal excretion of phosphate

PTH will increase blood phosphate levels

Question 9
2.5 / 2.5 pts
Which of the following medications is used to maintain normal levels of uric acid? **(mark all that apply)**

Colchicine

NSAIDS
Correct!

Allopurinol

Question 10
0 / 2.5 pts
Multiple Choice:

Damage to the synovial membrane resulting in non-specific inflammation occurs in which stage of OA?

Early stages
You Answered

Mid stages
Correct Answer

Late stages

Question 11
2.5 / 2.5 pts
Multiple Choice:

Which of the following is false regarding the synovium?

The inner membrane of the joint capsule is referred to as the synovium
Correct!

The synovium surrounds the margins of articulation and lines the articulating surfaces of the joint

The synovium secretes fluid that facilitates movement between articulating surfaces

Question 12
2.5 / 2.5 pts

Senile Osteoporosis is characterized by which of the following? **(mark all that apply)**
Correct!
☑

Fractures of the hip joint
☐

Fractures of the distal radius
Correct!
☑

A direct relationship between aging and rate of bone loss

Question 13
Not yet graded / 2.5 pts
T/F – If False, change the statement to make it True

Osteoblast replication and activity are increased with age.
Your Answer:
False. osteoclast
False, Osteoblast replication and activity are decreased with age.

Question 14
Not yet graded / 2.5 pts
T/F – if False, change the statement to make it True

Haversian canals contain the nerve and blood supply for the osteon.
Your Answer:
True
True

Question 15
Not yet graded / 2.5 pts
T/F – if False, change the statement to make it True

Secondary gout is characterized by the overproduction or the underexcretion of uric acid.
Your Answer:
False. Primary gout
False, Primary gout is characterized by the overproduction or the underexcretion of uric acid.

Question 16
Not yet graded / 2.5 pts
T/F – if False, change the statement to make it True

Prolonged immobilization can lead to structural joint changes associated with OA.
Your Answer:
True
True

Question 17
Not yet graded / 5 pts

If someone loses their balance when walking on uneven terrain, explain how tendons and ligaments work to protect the joint and structures within it.
Your Answer:
Tendons connects bones and muscles. Ligaments connect bone to bone. Tendons and ligaments are made up of collagen, a fibrous protein. Molecualr structure of collagen contributes to high tensile strenth. This allows for joint stability in the body.
The tendons and ligaments of joints serve in proprioception (the awareness of ones' position in space or movement of the body). When these structures undergo stretch or torsional strain, these proprioceptive nerve fibers will cause a reflexive response to adjust the tension on the muscles (to maintain balance and not fall over) that support the joint protecting the capsule and other joint structures.

Question 18
Not yet graded / 5 pts
A patient presents to the ER with severe pain in their right ankle. Blood tests reveal serum uric acid levels of 7.8 mg/dL. They are kept for observation and their 24-hr urine specimen reveals underexcretion of urate. Which phase of gout are they in? What is the goal of your treatment given the phase they are in?
Your Answer:
Patient is in phase 2, acute gout arthritis. Goal is to address the attack and reduce the inflammation. This can be done by using NSAIDs, such as colchicine, or corticosteriods.
This patient is in phase 2 of gout or acute gout arthritis. The goal of treatment is to manage symptoms and terminate the acute attack primarily through NSAIDS.

Question 19
Not yet graded / 5 pts
Which of the following patients is at greater risk for developing osteoporosis and sustaining a fracture? Explain how you came to your conclusion. Patient A. is a 75-year-old white Caucasian male who has a history of a distal radius fractures at age 65. Patient B. is a 60- year-old African American female who is postmenopausal. She is active and does not have a history of fractures.
Your Answer:
Patient A.
The patient is a white male over the age of 70. He has a previous history of bone fractures.
Patient A is at higher risk. Even though he is a male, he is advanced in age, white Caucasian, and sustained a fracture after the age of 50. Patient B is a postmenopausal female; however, she is active and of African American decent which is associated with high BMD and low rates of fracture.

Question 20
Not yet graded / 5 pts
A 40-year-old patient sustains an incomplete spinal cord injury affecting their ability to walk. They primarily use a wheel chair to complete daily activities. Explain why this patient is at increased risk for developing OA in their lower extremities.
Your Answer:
Males have a higher risk of developening OA. Immobility is a risk factor for developing OA. It compromises the lubrication of the joint. This can lead to structural changes.
Immobilization can compromise lubrication of the joint which comes with range of motion and weight bearing. The decreased nourishment of the articular cartilage will eventually lead to the structural joint changes associated with OA.

Question 21

Not yet graded / 5 pts
Compare and contrast the blood supply of cortical bone and cancellous bone.
Your Answer:
Cortical bones receive blood supply from nutrient and perforating arteries. Blood is circulated via the central haversion and volkmann canals. Cancellous bones receives blood differently. Instead of receiving blood by vessels, it receives blood via diffusion. It begins at the endoseal surface of the tissue and extends outward through the cancaliculi.
Cortical bone has a direct blood supply. Nutrient and Perforating arteries form an anastomosis (collateral circulation) that circulates through the bone through the Haversian and Volkmann canals. Cancellous bone does not have a direct blood supply. It receives its blood supply through diffusion from the endosteal bone surface extending outward through the canaliculi.

Question 22
Not yet graded / 5 pts
A 22-year-old competitive gymnast has experienced amenorrhea for the past 5 years. Her PCP is suspecting that she may have premature osteoporosis. Would you expect her RANKL levels to be high, normal, or low? Explain why her levels would be at this level.
Your Answer:
WIth 5 years of amenorrhea, this can result in a decline in overall estrogen levels. This will result in high RANKL levels. Estrogen increases the production of OPG, which lowers the rate of osteoclasts. Low levels of estrogen will result in low levels of OPG, which will lead to higher rates of osteoclast activity.
Her RANKL levels would be higher than normal. Amenorrhea results in lower estrogen levels. Estrogen increases the production of OPG which inhibits RANKL. Lower estrogen levels would lead to lower OPG levels in turn increasing RANKL and osteoclast activity.

Question 23
Not yet graded / 10 pts
A 68-year-old, white Caucasian female has a DEXA scan at the recommendation of her PCP. Her scan yielded a T-score of -0.9. Interpret the results of her DEXA scan. Develop a treatment plan giving a pharmacologic recommendation if applicable (be specific with name of supplement and/or class of drug), and a non-pharmacologic recommendation.
Your Answer:
T-score of -1.0 and above are considerd normal bone density. This patient is borderline, so its important that the patient take regular and adequate calcium, as well as incorporate weight bearing excercises. Recommended for postmenapausal women is 1500mg of calcium. This can be consumed via diet or supplements. Vitamin D supplements, between 400 and 800IUs, should be consumed as well. Vitamin D increases calcium absroption.
This T-score indicates normal bone density; however, because of this patient's age, race, and gender, she should take a Calcium supplement as well as a Vitamin D supplement. She should also be participating in regular weight bearing activities such as walking or even resistance exercise.

Question 24
Not yet graded / 10 pts
A 72-year-old male is said to be in phase 3 of gout. He is obese and has a history of alcohol abuse. Develop a treatment plan including specific pharmacologic intervention and a non-pharmacologic recommendation to manage his disease.
Your Answer:
During this inter-critical phase, preventing future attacks is key. Its important to get the uric acid levels under control. Allopurinol or a uricosuric drug can be used to reduce the uric acid. Lifestyle changes, such as decreasing alcohol consumption, avoiding foods rich in purines (fish, shellfish, bacon), and maintaning a healthy weight, can help in preventing future attacks.

Phase 3 of gout is called inter-critical gout. The patient is asymptomatic, and no joint abnormalities are present. The goal of treatment in this phase is to maintain normal uric acid levels and prevent progression of the disease. Allopurinol is a prescription drug that is used to reduce uric acid levels. This patient should be encouraged to lose weight and decrease his alcohol consumption. He should also avoid purine rich foods such as fish, bacon, and liver. (*Note – the student has to provide 1 pharmacologic intervention and 1 non-pharmacologic recommendation.)

Question 25
Not yet graded / 10 pts
A patient has a bilateral presentation of pain in the PIP joints of the hands. You believe this pain is due to arthritis but are unsure whether it is a result of RA or OA. What are 3 questions you could ask this patient to help you differentiate between RA and OA?
Your Answer:
1) Is this more of an acute pain or has been going on for sometime?
2) Do you experience morning stiffness, which resolves in less than 30min or does the pain linger past 30min?
3) Do you feel more pain during activity or does the pain resolve during activity?

1. Do you experience stiffness in the morning? 2. If so, does it last less than or longer than 30 minutes? 3. Does prolonged movement aggravate or alleviate your symptoms? 4. Do you ever have periods of relief, or do you experience pain daily? 5. Did your pain start in both hands or did it start with one hand and develop in the other over time? 6. What is your profession? (occupations requiring repetitive movements often lead to OA) *Note – student only has to provide 3 questions.