SYSTEM:

TEST BANK

subject: Physiology-HLS

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Guyton testbank

The following table of normal test values can be referenced throughout Unit VI.

Test	Normal Values
Bleeding time (template)	2-7 minutes
Erythrocyte count	Male: 4.3-5.9 million/μl^3
	Female: 3.5-5.5 million/μl^3
Hematocrit	Male: 41%-53%
	Female: 36%-46%
Hemoglobin, blood	Male: 13.5-17.5 g/dl
	Female: 12.0-16.0 g/dl
Mean corpuscular hemoglobin	25.4-34.6 pg/cell
Mean corpuscular hemoglobin concentration	31%-36% hemoglobin/cell
Mean corpuscular volume	80-100 fl
Reticulocyte count	0.5%-1.5% of red blood cells
Platelet count	150,000-400,000/μl^3
Leukocyte count and differential	
Leukocyte count	4500-11,000/μl^3
Neutrophils	54%-62%
Eosinophils	1%-3%
Basophils	0-0.75%
Lymphocytes	25%-33%
Monocytes	3%-7%
Partial thromboplastin time (activated)	25-40 seconds
Prothrombin time	11-15 seconds
Bleeding time	2-7 minutes

A 40-year-old woman visits the clinic complaining of fatigue. She had recently been treated for an infection. Her laboratory values are as follows: red blood cell (RBC) count, 1.8 × 106/μl; hemoglobin (Hb), 5.2 g/dl; hematocrit (Hct), 15; white blood cell (WBC) count, 7.6 × 103/μl; platelet count, 320,000/μl; mean corpuscular volume (MCV), 92 fL; and reticulocyte count, 24%. What is the most likely explanation for this presentation?

A) Aplastic anemia

B) Hemolytic anemia

C) Hereditary spherocytosis

D) B12 deficiency

B) This patient has increased production of RBCs as indicated by a markedly increased reticulocyte count in the setting of significant anemia (low number, Hb, and Hct). The RBCs being produced have a normal size (MCV = 90), and thus the patient does not have spherocytosis (small RBCs) or vitamin B_{12} deficiency (large RBCs). The normal WBC count and the increased reticulocyte count suggest that the bone marrow is functioning. The increased reticulocyte count means that a large number of RBCs are being produced. These laboratory values support an anemia due to some type of blood loss—in this case an anemia due to hemolysis.

What RBC enzyme facilitates transport of carbon dioxide (CO2)?

A) Myeloperoxidase

B) Carbonic anhydrase

C) Superoxide dismutase

D) Globin reductase

B) Carbonic anhydrase catalyzes the reaction of CO_2 with water to allow large amounts of CO_2 to be transported in blood as soluble bicarbonate ion.

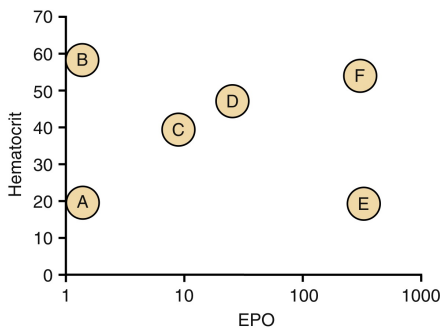
Which points in the figure below most closely define the following conditions? Normal erythropoietin (EPO) levels are approximately 10.

Olympic marathoner

Aplastic anemia

End-stage renal disease

Polycythemia vera



D) A well-trained athlete will have a slightly elevated EPO level, and the hematocrit will be elevated up to a value of 50%. A hematocrit higher than 50% suggests EPO treatment.

E) Aplastic anemia is a condition in which the bone marrow has a decreased production but does not respond to EPO. Therefore, a person with aplastic anemia would have a low hematocrit and an elevated EPO level.

A) People with end-stage renal disease have a decrease in EPO level due to decreased release from the diseased kidneys. As a consequence of the decreased EPO level, the hematocrit will be decreased.

B) In persons with polycythemia vera, the bone marrow produces RBCs without a stimulus from EPO. The hematocrit is very high, even up to 60%. With the elevated hematocrit there is a feedback suppression of EPO, and the EPO levels are very low.

How many oxygen atoms can be transported by each hemoglobin molecule?

A)2

B)4

C)8

D)16

C) Each hemoglobin molecule has four globin chains (in hemoglobin A, the predominant form in adults, the hemoglobin molecule includes two alpha and two beta chains). Each globin chain is associated with one heme group, containing one atom of iron. Each of the four iron atoms can bind loosely with one molecule (two atoms) of oxygen. Thus each hemoglobin molecule can transport eight oxygen atoms.

During the second trimester of pregnancy, where is the predominant site of RBC production?

A) Yolk sac

B) Bone marrow

C) Lymph nodes

D) Liver

D) RBC production begins in the yolk sac for the first trimester. Production in the yolk sac decreases at the beginning of the second trimester, and the liver becomes the predominate source of RBC production. During the third trimester, RBC production increases from the bone marrow and continues throughout life.

What function do vitamin B12 and folic acid perform that is critical to hematopoiesis?

A) Support porphyrin production

B) Serve as cofactors for iron uptake

C) Support terminal differentiation of erythroid and myeloid cells

D) Support production of thymidine triphosphate

D) Cell proliferation requires DNA replication, which requires an adequate supply of thymidine triphosphate. Both vitamin B_{12} and folate are needed to make thymidine triphosphate.

A 38-year-old healthy woman comes to you for a routine visit. She has spent the past 2 months hiking through the Himalayas and climbed to the base camp of Mount Everest. Which results would you expect to see on her CBC?

	Hematocrit	RBC count	WBC count	MCV
A)	↑	↑	↑	↑
B)	↑	↑	↔	↑
C)	↑	↑	↔	↔
D)	↑	↔	↔	↔
E)	↔	↑	↑	↔
F)	↑	↔	↑	↑
G)	↔	↑	↔	↑

C) Secondary polycythemia has developed because of exposure to low oxygen levels. She will have an increased hematocrit level, and thus an increased RBC count, but a normal WBC count. The cells are normal, so the MCV will be normal.

A 34-year-old man with schizophrenia has had chronic fatigue for 6 months. He has a good appetite but has refused to eat vegetables for 1 year because he hears voices saying that vegetables are poisoned. His physical and neurological examinations are normal. His hemoglobin level is 9.1 g/dl, his leukocyte count is 10,000/µl3, and his MCV is 122. What is the most likely diagnosis?

A) Acute blood loss

B) Sickle cell anemia

C) Aplastic anemia

D) Hemolytic anemia

E) Folic acid deficiency

E) This patient is anemic; Hg levels are <14 g/dl. The WBC count is normal, suggesting normal bone marrow. His RBCs are considerably larger than normal (normal MCV = 90). His lack of vegetable consumption suggests either a vitamin B_{12} or folic acid deficiency. However, the body has sufficient stores of vitamin B_{12} to last 4 to 5 years, so he does not appear to have vitamin B_{12} deficiency. The body only stores folic acid for 3 to 6 months, so not eating vegetables for 1 year would result in a folic acid deficiency.

What immunologic signal causes mast cells to release their granular contents (e.g., heparin, histamine, bradykinin, serotonin, and leukotrienes)?

A) Release of interleukin (IL)-1 by macrophages

B) Cross-linking of cell surface–bound immunoglobulin E (IgE) by antigen

C) Binding of antigen-antibody complexes to immunoglobulin G (IgG) receptors

D) Binding of tissue factor to surface glycoproteins

B) Mast cells express large numbers of high-affinity IgE receptors that are "pre-loaded" with IgE molecules that have been bound from plasma. When multiple IgE molecules of the appropriate specificity encounter their cognate antigen, cross-linking of the cell-bound IgE and initiation of degranulation through signals generated by the IgE receptors result.

A patient presents to your office complaining of extreme fatigue and shortness of breath on exertion that has gradually worsened during the past 2 weeks. Physical examination reveals a well-nourished woman who appears comfortable but somewhat short of breath. Her vital signs include a pulse of 120, a respiratory rate of 20, and blood pressure of 120/70. When she stands up, her pulse increases to 150 and her blood pressure falls to 80/50. Her hematologic values are as follows: Hb, 7 g/dl; Hct, 20%; RBC count, 2 × 106/µl; and platelet count, 400,000/µl. On a peripheral smear, her RBCs are microcytic and hypochromic. What is your diagnosis?

A) Aplastic anemia

B) Renal failure

C) Iron deficiency anemia

D) Sickle cell anemia

E) Megaloblastic anemia

C) The blood cell count values show that the patient is anemic. Her bone marrow is functioning and she has a normal platelet count, but she is generating a decreased number of abnormal RBCs. The microcytic (small), hypochromic (decreased intracellular hemoglobin) RBCs are a classic finding of iron deficiency anemia. If she had renal failure, she would be anemic with normal RBCs. People with sickle cell anemia have misshapen RBCs. Megaloblastic anemia is characterized by macrocytic (large) RBCs.

Which phagocytes can extrude digestion products and continue to survive and function for many months?

A) Neutrophils

B) Basophils

C) Macrophages

D) Eosinophils

C) Basophils are not phagocytic, and eosinophils are weak phagocytes. Neutrophils respond rapidly to infection or inflammation and ingest from 3 to 20 bacteria or other particles before dying. Macrophages become activated and enlarged at sites of inflammation and can ingest up to 100 bacteria per macrophage. They can extrude digested material and remain viable and active for many months.

During an inflammatory response, what is the correct order of cellular events?

A) Filtration of monocytes from blood, increased production of neutrophils, activation of tissue macrophages, infiltration of neutrophils from the blood

B) Activation of tissue macrophages, infiltration of neutrophils from the blood, infiltration of monocytes from blood, increased production of neutrophils

C) Increased production of neutrophils, activation of tissue macrophages, infiltration of neutrophils from the blood, infiltration of monocytes from blood

D) Infiltration of neutrophils from the blood, activation of tissue macrophages, infiltration of monocytes from blood, increased production of neutrophils

B) The first cellular event during an inflammatory state is activation of the tissue macrophages. Invasion of neutrophils and monocytes then occur in that order. Finally, production of WBCs is increased by the bone marrow.

A 45-year-old man presents to the emergency department with a 2-week history of diarrhea that has gotten progressively worse during the past several days. He has minimal urine output and is admitted to the hospital for dehydration. His stool specimen is positive for parasitic eggs. Which type of WBC would have an elevated number?

A) Eosinophils

B) Neutrophils

C) T lymphocytes

D) B lymphocytes

E) Monocytes

A) Eosinophils constitute about 2% of the total WBC count, but they are produced in large numbers in people with parasitic infections.

Adhesion of WBCs to the endothelium is

A) Due to a decrease in selectins

B) Dependent on activation of integrins

C) Due to the inhibition of histamine release

D) Greater on the arterial than on the venous side of the circulation

B) Activation of selections or integrins results in adhesion of WBCs to endothelium.

A 65-year-old alcoholic experienced chest pain and cough with an expectoration of sputum. A blood sample revealed that his WBC count was 21,000/µl. What is the origin of these WBCs?

A) Pulmonary alveoli

B) Bronchioles

C) Bronchi

D) Trachea

E) Bone marrow

E) All WBCs originate from the bone marrow from myelocytes or lymphocyte precursors.

What is the term for binding of IgG and complement to an invading microbe to facilitate recognition?

A) Chemokinesis

B) Opsonization

C) Phagolysosome fusion

D) Signal transduction

B) Phagocytosis of bacteria is enhanced by the presence on their surfaces of both immunoglobulin and products of the complement cascade, which in turn bind to surface receptors on phagocytes. This "tagging" of bacteria and other particles for enhanced phagocytosis is called *opsonization.*

What condition leads to a deficiency in factor IX that can be corrected by an intravenous injection of vitamin K?

A) Classic hemophilia

B) Hepatitis B

C) Bile duct obstruction

D) Genetic deficiency in antithrombin III

C) Hemophilia is due to a genetic loss of clotting factor VIII. Most clotting factors are formed in the liver. Correction of the problem with a vitamin K injection implies that the liver is working fine and that the patient does not have hepatitis. Vitamin K is a fat-soluble vitamin that is absorbed from the intestine along with fats. Bile secreted by the gallbladder is required for the absorption of fats. If the patient is deficient in vitamin K, then clotting deficiency can be corrected by an injection of vitamin K. Antithrombin III has no relationship to factor IX.

A 55-year-old man who has been undergoing stable and successful anticoagulation with warfarin (Coumarin) for recurrent deep vein thrombosis is treated for pneumonia, and 8 days later he presents with lower intestinal bleeding. His prothrombin time is quite prolonged. What is the appropriate therapy?

A) Treatment with tissue plasminogen activator

B) Infusion of calcium citrate

C) Treatment with fresh frozen plasma and vitamin K

D) Rapid infusion of protamine

C) Antibiotic treatment for pneumonia can kill flora in the gastrointestinal tract that are critical for the production of vitamin K. Production of several active clotting factors (prothrombin and factors VII, IX, and X) has been suppressed in this patient by warfarin inhibition of VKOR c1, which normally reduces vitamin K so that it can activate the listed clotting factors. Further reduction of vitamin K by the death of critical gut flora has produced excessive anticoagulation and resulted in bleeding in this patient. Fresh frozen plasma is infused to provide active clotting factors immediately, and vitamin K is provided to promote endogenous production of active clotting factors. Both are needed in the setting of acute bleeding.

A patient has a congenital deficiency in factor XIII (fibrin-stabilizing factor). What would analysis of his blood reveal?

A) Prolonged prothrombin time

B) Prolonged whole blood clotting time

C) Prolonged partial thromboplastin time

D) Easily breakable clot

D) Fibrin monomers polymerize to form a clot. Creation of a strong clot requires the presence of fibrin-stabilizing factor that is released from platelets within the clot. The other clotting tests determine the activation of extrinsic and intrinsic pathways or number of platelets.

Which coagulation pathway begins with tissue thromboplastin?

A) Extrinsic pathway

B) Intrinsic pathway

C) Common pathway

D) Fibrin stabilization

A) The extrinsic pathway begins with the release of tissue thromboplastin in response to vascular injury or contact between traumatized extravascular tissue and blood. Tissue thromboplastin is composed of phospholipids from the membranes of tissue.

Which of the following causes some malnourished patients to bleed excessively when injured?

A) Vitamin K deficiency

B) Platelet sequestration by fatty liver

C) Serum bilirubin that raises neutralizing thrombin

D) Low serum protein levels that cause factor XIII problems

A) Several clotting factors that are formed in the liver require vitamin K to be functional. Vitamin K is a fat-soluble vitamin, and absorption is dependent on adequate fat digestion and absorption. Therefore, any state of malnutrition could have decreased fat absorption and result in decreased vitamin K absorption and decreased synthesis of clotting factors.

What is the primary mechanism by which heparin prevents blood coagulation?

A) Antithrombin III activation

B) Binding and inhibition of tissue factor

C) Binding available calcium

D) Inhibition of platelet-activating factor

A) The primary function of heparin is to bind to and activate antithrombin III.

Fluid exudation into the tissue in an acute inflammatory reaction is due to which of the following?

A) Decreased blood pressure

B) Decreased protein in the interstitium

C) Obstruction of the lymph vessels

D) Increased clotting factors

E) Increased vascular permeability

E) Fluid leaks into the tissue due to an increase in capillary permeability.

Where does the transmigration of WBCs occur in response to infectious agents?

A) Arterioles

B) Lymphatic ducts

C) Venules

D) Inflamed arteries

C) Transmigration of WBCs occurs through parts of the vasculature that have very thin walls and minimal vascular smooth muscle layers. This includes capillaries and venules.

Which cell type migrates into inflammatory sites to clean up necrotic tissue and direct tissue remodeling?

A) Neutrophil

B) Macrophage

C) Dendritic cell

D) Eosinophil

B) Dendritic cells are resident antigen-presenting cells, whereas eosinophils are weakly phagocytic cells whose products (e.g., major basic protein) can kill parasites without the eosinophils ingesting them. Macrophages follow the initial influx of neutrophils into an inflammatory site. Whereas neutrophils ingest a modest number of bacteria per cell before dying, macrophages persist at the site, ingesting and digesting infectious organisms and necrotic material and producing cytokines that direct tissue remodeling by fibroblasts and other cell types.

An 8-year-old boy frequently comes to the clinic for persistent skin infections that do not heal within a normal time frame. He had a normal recovery from the measles. A check of his antibodies after immunizations yielded normal antibody responses. A defect in which of the following cells would most likely be the cause of the continual infections?

A) B lymphocytes

B) Plasma cells

C) Neutrophils

D) Macrophages

E) CD4 T lymphocytes

C) For the acquired immune response, T and B lymphocytes and plasma cells, along with macrophages, are needed. Neutrophils are needed for routine infections.

Which of the following is appropriate therapy for a massive pulmonary embolism?

A) Heparin

B) Warfarin

C) Aspirin

D) Tissue plasminogen activator

D) Heparin is used for the prevention of a clot. Heparin binds to antithrombin III, resulting in the inactivation of thrombin. Warfarin is used to inhibit the formation of vitamin K clotting factors. Aspirin is used to prevent activation of platelets. Tissue plasminogen activator is used to break down an already formed clot, which is appropriate therapy for a pulmonary embolus.

A 63-year-old woman returned to work after a vacation in New Zealand. Several days after returning home, she awoke with swelling and pain in her right leg, which was blue. She immediately went to the emergency department, where examination showed an extensive deep vein thrombosis involving the femoral and iliac veins on the right side. After resolution of the clot, this patient will require which treatment in the future?

A) Continual heparin infusion

B) Warfarin

C) Aspirin

D) Vitamin K

D) Heparin is used for the prevention of a clot. Heparin binds to antithrombin III, resulting in the inactivation of thrombin. Warfarin is used to inhibit the formation of vitamin K clotting factors. Aspirin is used to prevent activation of platelets. Tissue plasminogen activator is used to break down an already formed clot, which is appropriate therapy for a pulmonary embolus.

Which agent is not effective as an in vitro anticoagulant?

A) Heparin

B) Warfarin (Coumadin)

C) Ethylenediamine tetraacetic acid (EDTA)

D) Sodium citrate

B) Warfarin interferes with endogenous production of active clotting factors but does not affect their function once they are present, as in normal plasma. Heparin activates antithrombin III to produce anticoagulation either in vitro or in vivo. Both EDTA and sodium citrate bind calcium, which is necessary for clotting to proceed.

A 62-year-old man who was known to have a normal blood cell count and differential count 3 months ago presents with pallor, bone pain, bruising, and a WBC count of 42,000. Eighty-five percent of cells in the circulation appear to be immature granulocytes. What is the diagnosis?

A) Acute lymphocytic leukemia

B) Acute myelocytic leukemia

C) Chronic lymphocytic leukemia

D) Chronic myelocytic leukemia

B) The WBC count of 42,000 is higher than the range usually seen as a response to infection and suggests leukemia. The patient's florid clinical presentation suggests an acute process, and findings of a normal CBC 3 months previously confirm that this patient has an acute leukemia. Granulocytes are myeloid cells, and the fact that they are in the circulation while still being immature is wholly compatible with leukemia. Thus the patient has acute myelocytic (also referred to as "myelogenous" or "myeloid") leukemia.

After a person is placed in an atmosphere with low oxygen, how long does it take for increased numbers of reticulocytes to develop?

A) 6 hours

B) 12 hours

C) 3 days

D) 5 days

E) 2 weeks

C) EPO levels increase after a decreased arterial oxygen level, with the maximum EPO production occurring within 24 hours. It takes 3 days for new reticulocytes to appear in the circulation, and after a total of 5 days from the beginning of hypoxemia, these reticulocytes will be circulating as mature erythrocytes. Because it takes 1 to 2 days for a reticulocyte to become an erythrocyte, the correct answer is 3 days until the person has an increased number of reticulocytes.

A 24-year-old man came to the emergency depart- ment with a broken leg. A blood test revealed his WBC count to be 22 × 103/µl. Five hours later, a second blood test revealed values of 7 × 103/µl. What is the cause of the increased WBC count in the first test?

A) Increased production of WBCs by the bone marrow

B) Release of pre-formed, mature WBCs into the circulation

C) Decreased destruction of WBCs

D) Increased production of selectins

B) The majority of WBCs are stored in the bone marrow, waiting for an increased level of cytokines to stimulate their release into the circulation. However, trauma to bone can result in a release of WBCs into the circulation. This increase in WBC count is not primarily due to any inflammatory response, but instead is attributed to mechanical trauma and associated stress responses.

A 24-year-old African American man comes to the emergency department 3 hours after the onset of severe back and chest pain. These problems started while he was skiing. He lives in Los Angeles and had a previous episode of these symptoms 5 years ago while visiting Wyoming. He is in obvious pain. Laboratory studies show the following values:
Hemoglobin = 11 g/dl Leukocyte count = 22,000/µl3 Reticulocyte count = 25%
What is this patient's diagnosis?

A) Acute blood loss

B) Sickle cell anemia

C) Anemia of chronic disease

D) End-stage renal disease

B) This African American man has sickle cell anemia, as demonstrated by his decreased hemoglobin concentration and elevated reticulocyte count. He has some infectious/inflammatory response, as illustrated by the elevated WBC count. The high altitude was the stimulus for a hypoxic episode that caused sickling of his RBCs.

A patient presents with hemoglobin of 7.9 g/dl, hematocrit of 23%, and mean corpuscular volume of 89 fl. Erythropoietin level is quite low. What is the most likely diagnosis?

A) Sickle cell anemia

B) Pernicious anemia

C) End-stage renal disease

D) Chronic blood loss

C) In end-stage renal disease, the kidneys cease to make erythropoietin, leading to severe anemia. The types of anemia in the other three possible answers lead to red blood cell loss or destruction and *increased* erythropoietin due to tissue hypoxemia.

A patient has a hematocrit of 63% and a reduced erythropoietin level. Based on this information alone, what is the most likely diagnosis?

A) Prolonged and continued exposure to high altitude

B) Polycythemia vera

C) Chronic obstructive pulmonary disease with hypoxemia

D) Hemochromatosis

B) In polycythemia vera autonomous, clonal production of red blood cells results in increased hemoglobin, hematocrit, and red blood cell count and decreased erythropoietin, because hypoxemic drive for "epo" production is reduced. High-altitude exposure and chronic obstructive pulmonary disease are both associated with tissue hypoxemia that drives *increased* erythropoietin production.

A 74-year-old man has a hemoglobin of 6.0 g/dl, hematocrit of 19%, mean corpuscular volume of 117, and large, bizarrely shaped erythrocytes on peripheral blood smear. His serum folic acid levels are normal. What is the likely cause of this disorder?

A) Insufficient intrinsic factor

B) Vitamin K deficiency

C) Hepatic cirrhosis

D) Alpha thalassemia

A) The clinical presentation is that of a megaloblastic anemia, which can be caused by a deficiency of either vitamin B_{12} or folic acid. Because this patient's folic acid levels are normal, the cause must be vitamin B_{12} deficiency caused by atrophy of the gastric mucosa resulting in insufficient production of intrinsic factor, needed for normal gastrointestinal absorption of vitamin B_{12}.

When red blood cells break down, the porphyrin portion of hemoglobin is converted by macrophages to what product(s)?

A) Xanthine

B) Branched-chain amino acids

C) Homocysteine

D) Bilirubin

D) Macrophages convert the porphyrin portion of hemoglobin to bilirubin.

What cells ingest foreign material and micro-organisms within the sinusoids of the liver?

A) Dendritic cells

B) Megakaryocytes

C) Basophils

D) Kupffer cells

D) Kupffer cells are tissue-specific macrophages that reside in the hepatic sinusoids.

What cell type can interact with IgE and release large amounts of histamine, bradykinin, serotonin, heparin, lysosomal enzymes, and other inflammatory mediators?

A) Neutrophils

B) Basophils and mast cells

C) Eosinophils

D) Monocytes

B) Cross-linking of IgE receptors on the surface of basophils and mast cells results in their degranulation, releasing an array of inflammatory mediators.

A 60-year-old man is noted on a routine physical examination to have a significantly elevated white blood cell (WBC) count of 22,000/µl3, and 80% of cells are mature- appearing cells with large, round nuclei and scant cytoplasm. A review of the record shows that the WBC count has been moderately elevated for at least 18 months. What is the likely diagnosis?

A) Acute lymphocytic leukemia

B) Chronic lymphocytic leukemia

C) Acute myelocytic leukemia

D) Chronic myelocytic leukemia

. **B)** The white blood cell count has been elevated for more than a year and the cells that are in excess are mature-appearing cells that clearly are lymphocytes. Thus, this is chronic lymphocytic leukemia (CLL). Patients with CLL frequently remain asymptomatic for long periods, often many years.

"اللهم اكسر بنا شوكتهم، اللهم نكّس بنا رايتهم، اللهم أذل بنا قادتهم ، اللهم حطّم بنا هيبتهم، اللهم أزل بنا دولتهم، اللهم أنفذ بنا قدرك فيهم بالزوال والتدمير والتتبير، اللهم استعملنا ولا تستبدلنا "

Past questions and external sources

1- Wrong about eosinophil

A. like neutrophils, they migrate to the inflammation site

B. they don't play any role in wound healing

C. easily detected in blood samples

D. with basophils, they form 5% of blood cells

2- Fibrin stabilizing factor is:

A. factor V

B. factor VII

C. factor X

D. factor XIII

E. factor II

3- Wrong statement regarding hemostasis :

A. platelet aggregation is after clot formation

B. Migrating neutrophils binding is weak

4- Not a role of thrombin:

A) polymerization of fibronogen monomers to fibrin fibers

B) Binds to its receptor on platelets

C) Promotes activation of factor v

5- one of the following is procoagulant:

A)protein c

B) heparin

C)phospholipid

D)prostacyclin

E) thrombomodulin

Answers

Q	1	2	3	4	5
	B	D	A	A	C

6- Heparin blocks blood-coagulation by:

A. Inducing the activity of tissue factor pathway inhibitor

B. Activating plasminogen activation

C. Inhibiting the release of contents of platelet granules

D. Sequestering calcium ions

E. Promoting the interaction of anti-thrombin III to thrombin

7- All of the following are classifications of dietary deficiencies causing nutritional anemia except:

A. Vitamin B12 (cyanocobalamin).

B. Folic acid.

C. Vitamin D.

D. Iron.

8-Which of the following is wrong about HbF (Fetal hemoglobin)?

a. It can bind 8 oxygen atoms

b. It has similar affinity to myoglobin

c. It is only found in adults

d. It has higher affinity than adult hemoglobin

9- One of the following statements is wrong regarding platelets:

a. They help in injury site remodelling

b. They help in clot retraction

c. Platelet adhesion means platelets attached together in the injury site

10- The wrong statement regarding iron metabolism in haemolysis:

a. Iron is eliminated through the GI system

b. Biliverdin is excreted via bile

Answers

Q	6	7	8	9	10
	E	C	C	C	A

11- Hematocrit is increased in:

A. Dehydration

B. Pregnancy

C. Chronic renal failure

D. Thalassemia

12- Which of the WBCs rise in number in parasitic infections?

A. Monocyte

B. Basophil

C. Eosinophil

D. Neutrophil

13- Which of the WBCs is similar to mast cells in its function?

A. Neutrophil

B. Basophil

C. Eosinophil

D. Monocyte

14- Plasma erythropoietin level is increased in all of the following conditions EXCEPT:

A. High altitude

B. Bone marrow tumor

C. Venous arterial shunt

D. Pulmonary disease

15- Reticulocytosis occurs in:

A. Bone marrow stimulation

B. Vitamin B12 deficiency

C. Iron deficiency

D. X ray radiation

Answers

Q	11	12	13	14	15
	A	C	B	B	A

16- Hemoglobin structure is abnormal in:

A. Thalassemia

B. Pernicious anemia

C. Iron deficiency anemia

D. Polycythemia

17- Mean corpuscular volume is increased in:

A. Iron deficiency

B. Acute blood loss

C. Hereditary spherocytosis

D. Vitamin B12 deficiency

18- The immediate precursor of RBC in its development is:

A. Stem cell

B. Proerythroblast

C. Reticulocyte

D. Late normoblast

19- Iron is present in all of the following EXCEPT:

A. Heme

B. Bilirubin

C. Myoglobin

D. Ferritin

20- Tissue macrophage is formed from:

A. Lymphocyte

B. Monocyte

C. Neutrophil

D. Eosinophil

21- Which are the two most common types of white blood cells?

A. neutrophils and lymphocytes

B. erythrocytes and neutrophils

C. neutrophils and eosinophils

D. monocytes and lymphocytes

22- Which of the following statements about platelets is INCORRECT:

A. adhere to collagen fibres of damaged tissue

B. release phospholipids which combine with “clotting factors” to produce prothrombin activator.

C. are cell fragments derived from megakayoblasts

D. are part of the “extrinsic pathway” for the formation of prothrombin activator.

Answers

Q	16	17	18	19	20	21	22
	A	D	C	B	B	A	B

23- About Neutrophil granulocytes which one is NOT true?

A. Are the most common leukocyte in normal blood.

B. Contain proteolytic enzymes.

C. Have a lifespan in the circulation of 3–4 weeks.

D. Contain actin and myosin microfilaments

24- About Blood platelets all the following are true except

A. Are formed in the bone marrow.

B. Are normally more numerous than white cells.

C. Have a small single-lobed nucleus.

D. Increase in number after injury and surgery

25- About Red cell formation is increased by all the following except

A. By giving vitamin B12 injections to healthy people on a normal diet.

B. In blood donors one week after a blood donation.

C. In patients with haemolytic anaemia.

D. By giving injections of erythropoietin to nephrectomized patients

26- Which is the LEAST common type of white blood cell?

A. lymphocyte

B. basophil

C. thrombocyte

D. neutrophil

27- Pernicious anemia due to deficiency of :-

A. Vitamin K.

B. Iron.

C. Vitamin B12.

D. Non of the above.

28- The first phase of hemostasis os :-

A. Separation of globin & heme.

B. Platelets agregation .

C. Acivation of prothrombin.

D. Vascular spasm

29- Iron deficiency

A. Frequently follows persistent loss of blood from the body.

B. Is more common in men than in women.

C. May cause anaemia by inhibiting the rate of multiplication of RBC stem cells.

D. May cause large pale erythrocytes to appear in peripheral blood.

Answers

Q	23	24	25	26	27	28	29
	C	C	A	B	C	D	A

30- Erythropoietin :- -.

A. Is produced mainly by the heart

B. Inhibit the production of RBCs

C. Its production increases when blood O2 decreases.

D. Its production inhibited by testosterone

31- The following is Required for intrinsic pathway of Blood clotting Except:

A) Factor XI

B) Factor VII

C) Factor IX

D) Factor XII

32- One of the following will Not contribute for Hemostasis?

A) Contact of platelets with collagen

B) Conversion of prothrombin to thrombin

C) Conversion of plasminogen to plasmin

D) Conversion of fibrinogen to fibrin

33- Ca+2 is essential for all the following steps in clotting Except:

A) Activation of factor IX By XIa

B) Activation of XI by XIIa

C) Activation of x by IXa

D) Formation of thrombin from prothrombin

34- All following About coagulation factor VII is true Except:

A) Synthesized in liver

B) Activated by tissue factor

C) Present in serum

D) Important in Extrinsic pathway

35- Warfarin if Administrated in large dose the patient can have an episode of bleeding, warfarin can be overcomed (antagonised) by:

A) Fibrinogen

B) Thrombin

C) Protein C

D) Vitamin K

36- A hematocrite of 40% means that in the sample of blood analyzed:

A) 40% of the hemoglobin is in the plasma.

B) 40% of the total blood volume is made up of blood plasma.

C) 40% of the total blood volume is made up of red blood cells.

D) 40% of the hemoglobin is in red blood cells

Answers

Q	30	31	32	33	34	35	36
	C	B	C	B	C	D	C

37- Viscosity of the blood:

a) Is increased in acclimatized mountaineers

b) Is increased in people with iron deficiency

c) Is increased when the haematocrit value equals 40%

d) Is caused by fibrinogen only

38- In the normal human blood:

a) The eosinophils are the most common white blood cells.

b) The iron is mostly in the form of Hb.

c) There are more lymphocytes than neutrophils.

d) There are more white cells than red cells.

39- Factor VII (stable factor) to be activated needs:

a) Factor XIII.

b) Fibrin.

c) Factor V.

d) Factor X

e) Tissue factor (factor III) (TF)

40- Prothrombin to be activated to thrombin needs:

a) Factor XIII.

b) Fibrin.

c) Factor V.

d) Factor X.

e) Both c & d are correct.

41- Which of the following is normally circulating in the plasma:

a) Prothrombin.

b) Fibrin.

c) Plasmin.

d) Thrombin

e) Prothrombinase (prothrombin activator).

42- An antigen is:

A. A chemical messenger that is released by virus infected cells

B. A lymphocyte responsible for cell-mediated immunity

C. Something that coats the inside of lungs, causing infection

D. A protein or other molecule that is recognized as non-self

E. A thick yellow-white fluid

Answers

Q	36	38	39	40	41	42
	A	B	E	E	A	D

43- Which of the following is TRUE?

A. Basophils and lymphocytes are both granulocytes

B. Neutrophils and monocytes are both agranulocytes.

C. All leukocytes are granulocytes

D. All agranulocytes are leukocytes

E. None of the above

44- Which of the following components of plasma functions by preventing pH change?

A. Electrolytes such as K+

B. Wastes such as lactic acid

C. Water

D. Nutrients such as glucose

E. Buffers such as bicarbonate

45- A single molecule of hemoglobin can transport up to ___ molecules of oxygen.

A. 1

B. 2

C. 4

D. 8

E. 12

46- Which of the following is TRUE of blood?

A. Blood pH is usually between 7.75 and 7.85.

B. The human body contains a total of 4-6 milliliters of blood

C. Blood is a specialized type of epithelial tissue

D. Blood consists of formed elements and plasma

E. Blood is about 5 times less viscous than water

47- Which of the following is NOT TRUE?

A. Platelet plug formation is a positive feedback process

B. An increase in plasma levels of thrombin will cause an increase in plasma levels of fibrin

C. Prostacyclin acts to inhibit platelet plug formation

D. Fibrinogen is primarily produced by the kidneys

E. All of the above

48- Which of the following is TRUE?

A. A massive increase in blood viscosity would cause the efficiency of blood flow to increase

B. Under conditions of low O2 sickle-cell hemoglobin becomes spiky and sharp and the red blood cells acquire a crescent shape

C. Surgical removal of the stomach could NOT cause anemia

D. No product of bilirubin breakdown is excreted in the feces

E. All of the above

Answers

Q	43	44	45	46	47	48
	D	E	C	D	D	B

49- Which of the following is TRUE?

A. Leukopenia is normal during a modest bacterial infection

B. During leukemia, platelet and erythrocyte counts can decrease

C. Platelet plug formation is a negative feedback process

D. Prothrombin activator converts thrombin into plasmin

E. Most clotting factors are synthesized by the spleen

50- Which of the following can retard coagulation?

I. Low platelet count

II. Aspirin

III. Liver disease

IV. Lack of dietary or enteric vitamin K

A. I, II, III, and IV

B. I, II, and IV

C. I, II, and III

D. II, III, and IV

E. I only

51- Put the following steps of coagulation in the correct order.

1. Fibrinolysis
2. Prothrombin activator is formed
3. Subendothelial collagen is exposed
4. Thrombin is formed from prothrombin
5. Fibrinogen is converted to fibrin

A. 1-3-4-2-5

B. 3-1-4-2-5

C. 3-2-4-5-1

D. 3-4-2-5-1

E. 3-2-4-1-5

52- Which of the following is TRUE?

A. Oxyhemoglobin is more likely to be found in the superior vena cava than in the aorta

B. Deoxyhemoglobin is more likely to be found in the aorta than in the superior vena cava

C. Each molecule of hemoglobin can transport 1 molecule of oxygen

D. The binding of hemoglobin to oxygen is reversible

E. More than 1 of the above

Answers

Q	49	50	51	52
	B	A	C	D

53- Blood is involved in:

I. Nutrient distribution

II. Transport of nitrogenous wastes

III. Maintaining adequate electrolytes levels in the body

IV. Transport of white blood cells

A. I, II, III, and IV

B. II, III and IV

C. I, II, and III

D. I, II, and IV

E. I, III, and IV

54- Which of the following is INCORRECT?

A. In a female adult, aged red blood cells are destroyed in the spleen

B. In a female adult, red blood cells are primarily synthesized in the tibia and fibula

C. In a male child, red blood cells function in oxygen transport

D. Red blood cells that lack hemoglobin are less efficient at O2transport

E. Red blood cells lack nuclei

55- In intrinsic pathway of hemostasis factor ten (X) is activated by:

A. Active factor IX only

B. Factor VIII and ADP only

C. Ca + and active factor IX only

D. All the above

56- What is the difference between a thrombus and an embolus?

A. One occurs within the cerebral bloodstream while the other does not

B. Emboli occur only once

C. An embolus cannot contribute to the occlusion of a coronary vessel while a thrombus cannot contribute to a blockage of a cranial arteriole

D. A thrombus must travel to become an embolus

57- Damaged red blood cells are phagocytized by macrophages in the spleen or liver and their components are Recycled, EXCEPT for the

A. Iron atom from the heme group, which is excreted in bile

B. Globin peptide chains, which are sent to the kidneys for excretion

C. Globin peptide chains, which are converted into bilirubin

D. Heme group (minus the iron atom), which is converted into a green pigment called biliverdin

Answers

Q	53	54	55	56	57
	A	B	D	D	D