



(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2022/2023

ACADEMIC YEAR

FIRST YEAR THIRD TRIMESTER

MAIN EXAMINATION

**FOR BACHELOR OF SCIENCE IN
NURSING DEGREE**

COURSE CODE: NUR 132

COURSE TITLE: HEMATOLOGY AND CLINICAL CHEMISTRY


DATE: 04/07/2023

TIME: 09:00 am – 12:00 PM

INSTRUCTIONS TO CANDIDATES

Answer ALL Section one (1) MULTIPLE CHOICE QUESTIONS and ALL Section two (2) SHORT ANSWER QUESTIONS and any one (1) section THREE (3) LONG ANSWER QUESTION.

TIME: 3 Hours

This paper consists of 9 printed pages. Please Turn Over 
KIBU observes ZERO tolerance to examination cheating

SECTION A: MULTIPLE CHOICE QUESTIONS

50 Marks

1. Which of the following tests can be used to detect hemolytic anemia?
 - A. Coombs test
 - B. Schilling test
 - C. Tensilon test
 - D. Sweat test
2. Which of the following is not associated with thrombotic thrombocytopenic purpura?
 - A. Thrombosis
 - B. Thrombocytopenia
 - C. Microangiopathic hemolytic anemia
 - D. Neurologic deficits
3. Which of the following is the most possible causative agent of acute viral hemorrhagic fever in a patient with a history of tick bite?
 - A. Dengue virus
 - B. West Nile virus
 - C. Yellow fever virus
 - D. Crimean-Congo hemorrhagic fever virus
4. Which of the following requires IL-2 and IL-4 in the conversion of unilineage progenitor cell into mature circulating cell?
 - A. Neutrophil
 - B. Eosinophil
 - C. Basophil
 - D. B lymphocyte
5. Which of the following is the most likely diagnosis for a patient with bone pain, anemia, and hypercalcemia?
 - A. Small lymphocytic lymphoma
 - B. Myeloproliferative disorder
 - C. Multiple myeloma
 - D. Lymphoblastic leukemia
6. What is the lifespan of thrombocytes?
 - A) 120 days
 - B) 60 days
 - C) 14 days
 - D) 7 days
7. Which of the following is the most abundant granulocyte in human blood?
 - A) Basophils
 - B) Eosinophils
 - C) Neutrophils
 - D) Monocytes
8. Where does hematopoiesis take place in the embryo?
 - A) Bone marrow
 - B) Liver
 - C) Spleen
 - D) Yolk sac
9. What is the function of azurophilic granules in leukocytes?
 - A) Phagocytosis
 - B) Antibody production
 - C) Blood clotting
 - D) Oxygen transport

10. What are hematopoietic stem cells?
 - A) Cells that produce red blood cells
 - B) Cells that produce white blood cells
 - C) Cells that produce platelets
 - D) Cells that can differentiate into any type of blood cell

11. What is the most common type of cell found in the blood?
 - A. White blood cells
 - B. Platelets
 - C. Red blood cells
 - D. Plasma

12. What is the function of blood?
 - A. To carry oxygen and nutrients to the lungs and tissues
 - B. To carry waste matter and carbon dioxide away from the body tissues
 - C. To help maintain the body's fluid balance
 - D. All of the above

13. What are the components of human blood?
 - A. Red blood cells, white blood cells, and platelets
 - B. Plasma, red blood cells, and white blood cells
 - C. Plasma, platelets, and white blood cells
 - D. Plasma, red blood cells, white blood cells, and platelets

14. What is the shape of a red blood cell?
 - A. Round
 - B. Square
 - C. Biconcave disk with a flattened center
 - D. Triangular

15. What is the function of white blood cells?
 - A. To transport oxygen and nutrients to the lungs and tissues
 - B. To carry waste matter and carbon dioxide away from the body tissues
 - C. To help maintain the body's fluid balance
 - D. To protect the body from infection

16. What is the normal range of white blood cells in the blood?
 A. 1,000-3,000/mm³
 B. 3,000-6,000/mm³
 C. 6,000-9,000/mm³
 D. 4,500-11,000/mm³
17. What is the normal range of red blood cells in the blood for females?
 A. 4.3-5.9 million/mm³
 B. 3.5-5.5 million/mm³
 C. 12.0-16.0 g/dL
 D. 41%-53%
18. What is the normal range of hemoglobin in the blood for males?
 A. 12.0-16.0 g/dL
 B. 13.5-17.5 g/dL
 C. 80-100 μm³
 D. 31%-36% Hb/cell
19. What is the normal range of hematocrit in the blood for females?
 A. 41%-53%
 B. 36%-46%
 C. 25.4-34.6 pg/cell
 D. 150,000-400,000/mm³
20. What is the shape of a red blood cell?
 A. Round
 B. Square
 C. Biconcave disk with a flattened center
 D. Triangular
21. What is the function of red blood cells?
 A. To protect the body from infection
 B. To transport oxygen to the body's tissues
 C. To help maintain the body's fluid balance
 D. To clot blood
22. What is the function of white blood cells?
 A. To transport oxygen to the body's tissues
 B. To carry waste matter and carbon dioxide away from the body tissues
 C. To help maintain the body's fluid balance
 D. To protect the body from infection

23. What is the normal range of platelets in the blood?
- A. 1,000-3,000/mm³
 - B. 3,000-6,000/mm³
 - C. 6,000-9,000/mm³
 - D. 150,000-400,000/mm³
24. What is the function of platelets?
- A. To transport oxygen to the body's tissues
 - B. To carry waste matter and carbon dioxide away from the body tissues
 - C. To help maintain the body's fluid balance
 - D. To help clot blood
25. Which artery is the first choice for arterial blood sampling?
- A. Brachial artery
 - B. Femoral artery
 - C. Radial artery
 - D. Carotid artery
26. What is the most frequently used vein for venipuncture?
- A. Median cubital vein
 - B. Basilic vein
 - C. Cephalic vein
 - D. Popliteal vein
27. What is the order of draw for venipuncture?
- A. Blood cultures, Na Citrate Coagulation tubes, Non-additive tube
 - B. Non-additive tube, Na Citrate Coagulation tubes, Blood cultures
 - C. Na Citrate Coagulation tubes, Non-additive tube, Blood cultures
 - D. Non-additive tube, Blood cultures, Na Citrate Coagulation tubes
28. What is the process by which the body seals a ruptured blood vessel and prevents further loss of blood?
- A. Hematopoiesis
 - B. Hemostasis
 - C. Hemolysis
 - D. Hemodynamics
29. What should be done before obtaining a blood sample from a patient who has just received a transfusion?
- A. Apply the tourniquet 3-4 inches above the collection site
 - B. Allow 10-15 minutes before obtaining a blood sample
 - C. Use a smaller gauge needle to avoid lysis of the specimen
 - D. Release the tourniquet and reapply after two minutes

30. What is the purpose of personal protective equipment (PPE) in blood sampling?
- A. To prevent contamination of the blood sample
 - B. To prevent the spread of infectious diseases
 - C. To protect the healthcare worker from exposure to bloodborne pathogens
 - D. All of the above
31. What is the purpose of anticoagulants in blood collection?
- A. To prevent clotting of the blood sample
 - B. To disinfect the collection site
 - C. To protect the healthcare worker from exposure to bloodborne pathogens
 - D. To prevent contamination of the blood sample
32. What is the purpose of disinfectants in blood sampling?
- A. To prevent clotting of the blood sample
 - B. To disinfect the collection site
 - C. To protect the healthcare worker from exposure to bloodborne pathogens
 - D. To prevent contamination of the blood sample
33. What is the most common type of anemia?
- A. Hemolytic anemia
 - B. Sickle cell anemia
 - C. Iron-deficiency anemia
 - D. Fanconi anemia
34. What is the role of red blood cells in anemia?
- A. To carry oxygen to tissues throughout the body
 - B. To fight infections
 - C. To clot blood
 - D. To regulate blood pressure
35. What is sickle cell anemia?
- A. An inherited hemolytic anemia in which the hemoglobin protein is abnormal, causing the red blood cells to be rigid and clog the blood vessels
 - B. A condition in which there are too few red blood cells to carry enough oxygen all over the body
 - C. A type of anemia caused by a shortage of iron in the body
 - D. A rare blood disorder that can cause anemia
36. What is the most severe form of sickle cell disease?
- A. Hemoglobin SC disease
 - B. Hemoglobin sickle-beta-thalassemia
 - C. Sickle cell trait
 - D. Sickle cell anemia

37. What is the cause of iron-deficiency anemia?
- A. Red blood cell destruction
 - B. A shortage of iron in the body
 - C. Abnormal hemoglobin
 - D. A lack of vitamins in the diet
38. What is Fanconi anemia?
- A. A type of anemia caused by a shortage of iron in the body
 - B. An inherited hemolytic anemia in which the hemoglobin protein is abnormal, causing the red blood cells to be rigid and clog the blood vessels
 - C. A rare blood disorder that can cause anemia
 - D. A rare blood disorder that affects the bone marrow and can cause anemia
39. What is the function of hemoglobin in red blood cells?
- A. To carry oxygen to tissues throughout the body
 - B. To fight infections
 - C. To clot blood
 - D. To regulate blood pressure
40. What is leukemia?
- A. A type of cancer that affects white blood cells
 - B. A type of cancer that affects red blood cells
 - C. A type of cancer that affects platelets
 - D. A type of cancer that affects bone marrow
41. What are the different types of leukemia classified by?
- A. The type of red blood cells affected
 - B. The type of white blood cells affected
 - C. The type of platelets affected
 - D. The type of bone marrow affected
42. What is the function of white blood cells?
- A. To fight viruses, bacteria, and other foreign invaders that threaten your health
 - B. To carry oxygen to tissues throughout the body
 - C. To clot blood
 - D. To regulate blood pressure
43. What is acute lymphocytic leukemia (ALL)?
- A. A cancer that starts from white blood cells called lymphocytes
 - B. A cancer that starts from red blood cells
 - C. A cancer that starts from platelets
 - D. A cancer that starts from bone marrow

44. What can cause uncontrolled growth of abnormal white blood cells?
- A. Myelodysplastic syndrome
 - B. Weak immune system
 - C. Cancer of the blood
 - D. All of the above
45. What are the three mechanisms involved in hemostasis?
- A. Vascular spasm, fibrin formation, platelet plug formation
 - B. Vascular spasm, coagulation, platelet plug formation
 - C. Vascular spasm, fibrin formation, coagulation
 - D. Vascular spasm, platelet plug formation, coagulation
46. What is myelodysplastic syndrome?
- A. A condition that causes abnormal production of white blood cells
 - B. A condition that causes abnormal production of red blood cells
 - C. A condition that causes abnormal production of platelets
 - D. A condition that causes abnormal production of bone marrow
47. Which inherited platelet disorder is due to a defect in α -granules?
- A. Bernard-Soulier syndrome
 - B. Glanzmann thrombasthenia
 - C. Gray platelet syndrome
 - D. Hermansky-Pudlak syndrome
48. Which inherited platelet disorder is associated with oculocutaneous albinism?
- A. Bernard-Soulier syndrome
 - B. Glanzmann thrombasthenia
 - C. Gray platelet syndrome
 - D. Hermansky-Pudlak syndrome
49. Which test measures the time it takes for a clot to form after a substance is added to a blood sample?
- A. Prothrombin time (PT)
 - B. Activated partial thromboplastin time (aPTT)
 - C. Bleeding time
 - D. Platelet aggregation test
50. What is the first step in hemostasis?
- A. Formation of a fibrin plug
 - B. Activation of the coagulation cascade
 - C. Constriction of the blood vessel
 - D. Formation of a platelet plug

INSTRUCTION: Answer ALL questions

SECTION B: SHORT ANSWER QUESTIONS (SAQS) 30 Marks

INSTRUCTION: Answer ALL questions

1. State any FIVE commonly used anticoagulants and their mode of action (5 marks).
2. State FIVE characteristics of hematopoietic growth factors (5 marks).
3. Describe the morphology and physiology of neutrophils (5 marks).
4. Describe the criteria of rejection of a blood sample (5 marks).
5. State FIVE functions of a tourniquet (5 marks).
6. State any FIVE disorders of red blood cells (5 marks).

SECTION C: LONG ANSWER QUESTIONS (LAQS)

20 Marks

INSTRUCTION: Answer any ONE question

1. Describe the structure and organization of the hematopoietic system (20 marks).
2. With relevant examples, describe the white blood cell disorders (20 marks).