CANDIDATE NUMBER…….

"Investing in Africa's future"

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

DEPARTMENT OF BIOMEDICAL AND LABORATORY SCIENCES

BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS DEGREE

NSLS 202: HAEMATOLOGY I THEORY

END OF FIRST SEMESTER FINAL EXAMINATIONS

NOVEMBER 2022

LECTURER: Mr T. Marembo

DURATION: 3 HOURS

INSTRUCTIONS

1. Write your candidate number on the space provided on top of each page
2. Answer **all** questions in sections A on the question paper.
3. Answer **all** questions in section B on separate answer sheets provided.
4. Answer any **3**questions in section C on separate answer sheets provided
5. The mark allocation for each question is indicated at the end of the question
6. Credit will be given for logical, systematic and neat

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SECTION A: MULTIPLE CHOICE [40MARKS]

- **Answer all questions by encircling the correct response T for True or F for False for each statement in all the questions**
- **Each correct response is allocated half mark**

1. Which of the following statements a true

T F (A) at birth, all marrow is red

T F (B) red blood cells are found in the buffy coat

T F (C) red blood cells have the ability to buffer pH

T F (D) only (C) is correct

2. Universal (standard) precautions apply to all the following:

T F (A) Blood

T F (B) Cerebral spinal fluid

T F (C) Stool samples

T F (A) Concentrated acids

3. Lab request forms for full blood count tests should be completely filled in. The type of information to be put include :

T F (A) patient's full name

T F (B) patient's unique identification number

T F (C) date of collection is not important

T F (D) collector's name

4. Which of the following changes occur during erythropoiesis

T F (A) Increase in size

T F (B) Hemoglobinization

T F (C) Loss of mitotic activity

T F (D) Disappearance of nucleus

5. Which of the following factors are needed during erythropoiesis:

T F (A) Erythropoietin

T F (B) Vitamin B6

T F (C) Glucose

T F (D) Proteins

6. Primary hemostasis involves the following :

T F (A) Platelets

T F (B) Vasoendothelial system

T F (C) Coagulation factors

T F (D) Vasoconstriction

7. The following are Romanowsky stains:

T F (A) Azurophilic

T F (B) Jamshidi

T F (C) Giemsa

T F (D) Leishman

8. Which of the following is the correct molecular structure of haemoglobin?

T F (A) Four haem groups, two iron, two globin chains

T F (B) Two haem groups, two iron, four globin chains

T F (C) Two haem groups, four iron, four globin chains

T F (D) Four haem groups, four irons, four globin chains

9. The following are some of the causes of neutropaenia:

T F (A) Typhoid

T F (B) Bacterial infection

T F (C) Aplastic anaemia

T F (D) Leukaemia

10. Factors of the intrinsic system include:

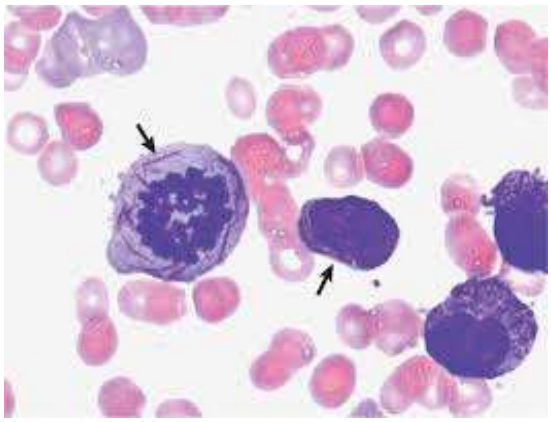
T F (A) Factor XII

T F (B) Factor XI

T F (C) Factor VII

T F (D) Factor VIII

11. What is name given to the pointed white blood cell inclusions in the picture below?



T F (A) Cabot rings

T F (B) Auer rods

T F (C) Pappenheimer Bodies

T F (D) Dohle Bodies

12. Of the Thalassaemia syndromes:

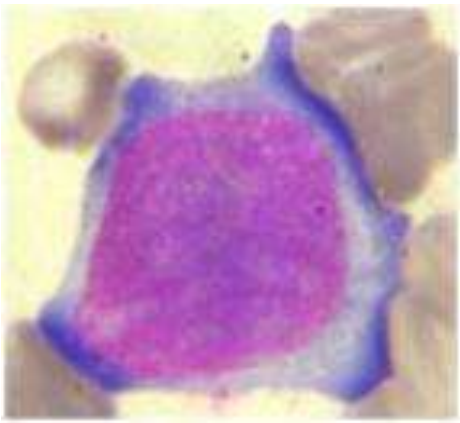
T F (A) Are characterized by reduced or absent synthesis of one or more globin chain type

T F (B) In Thalassaemia disease, globin chain defects are quantitative

T F (C) In Thalassaemia disease, globin chain defects are qualitative

T F (D) In Thalassaemia disease red blood cell function is normal

13. The cell in the picture below is a:



T F (A) Reticulocyte

T F (B) Pronormoblast

T F (C) Myeloblast

T F (D) Lymphocyte

14. Arrange the following starting with the least mature cell:

T F (A) orthochromatic normoblast →polychromatic normoblast→ reticulocyte →erythrocyte

T F (B) erythrocyte → orthochromatic normoblast → reticulocyte →polychromatic normoblast

T F (C) erythrocyte → reticulocyte →polychromatic normoblast→ orthochromatic normoblast

T F (D) polychromatic normoblast→ orthochromatic normoblast → reticulocyte →erythrocyte

15. Concerning eosinophils:

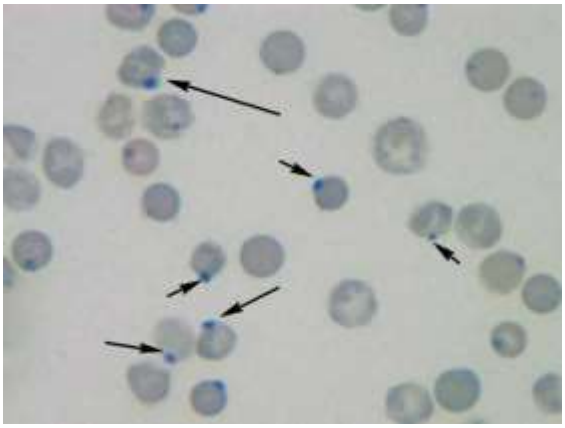
T F (A) They limit inflammatory responses

T F (B) Their granules contain histamine

T F (C) Maturing cells are morphologically recognized

T F (D) They have a key role in viral infection defense

16. The inclusions, pointed in the cells below are:



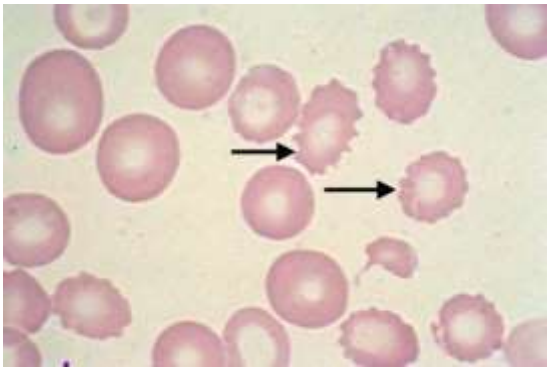
T F (A) Howell Jolly bodies

T F (B) Pappenheimer bodies

T F (C) Heinz bodies

T F (D) Basophilic stippling

17. Name the pointed cells in the picture below:



T F (A) acanthocytes

T F (B) burr cells

T F (C) crenated red cells

T F (D) Monocytes

18. Below shows the order the stem cells, beginning with the highest number of different cell types, they can give rise to

T F (A) Unipotent →pluripotent→ totipotent→ multipotent

T F (B) pluripotent →Unipotent → totipotent→ multipotent

T F (C) multipotent→ pluripotent → totipotent→ Unipotent

T F (D) totipotent→ pluripotent → multipotent→ Unipotent

19. Blood is composed of:

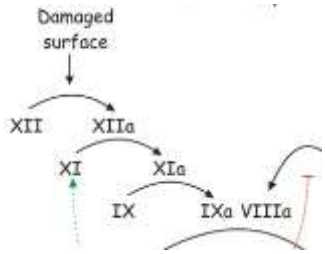
T F (A) Haemostatic proteins

T F (B) Immunoglobulins

T F (C) Innate (inborn) immune system proteins

T F (D) Transport proteins

20. The diagram below shows which pathway of the blood coagulation system?



T F (A) The intrinsic pathway

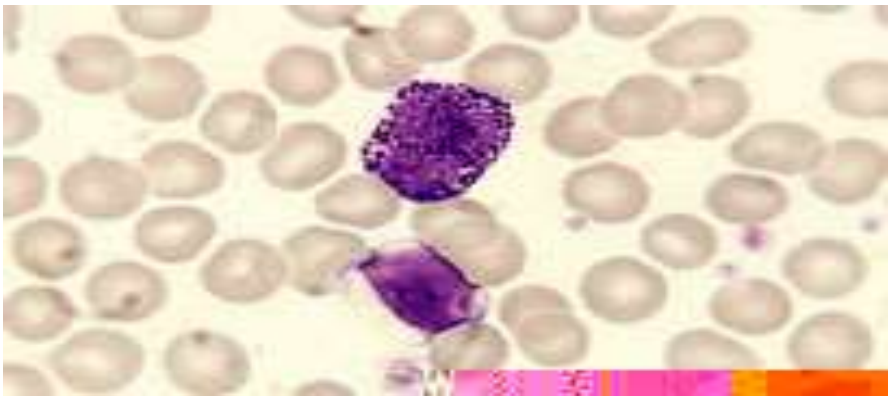
T F (B) The extrinsic pathway

T F (C) The common pathway

T F (D) Cell based pathway

Section B: Answer <u>all</u> questions: (Each question carries 5 marks)

1. Give a brief account of the structure and functions of erythrocytes.
2. Identify the two leucocytes in this picture and list any 2 functions of each.



3. Describe the difference between haemostasis and thrombosis

4. Match the following pairs (5marks)

I	Hemoglobin A	A	Haem
II	Sickle cell disease	B	4β
III	Hemoglobin F	C	α2β2
IV	porphyrin	D	α2γ2
V	α thalassemia	E	α2βS2

I----------II----------III----------IV----------V----------

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Section C (Answer three questions, each question carries 20 marks)

1. Describe the process of haemoglobin synthesis.
2. Describe any (five) pre-analytical, (five) analytical and (five) postanalytical errors in a hematological laboratory and how each one of them can be avoided.
3. Give a detailed account of the intrinsic, extrinsic and common pathways.
4. Describe the different parameters of a full blood count.
5. There are two types of bone marrow samples. Name them and give a detailed description of these two types of samples.