



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

SECOND YEAR FIRST SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF MEDICAL LABORATORY SCIENCES
DIRECT ENTRY/UPGRADING**

MAIN EXAM

COURSE CODE: BML 214

COURSE TITLE: FOUNDATIONS OF BLOOD TRANSFUSION SCIENCE

DATE:

TIME:

INSTRUCTIONS TO CANDIDATES

This paper is divided into three sections, **A B** and **C**, carrying respectively: Multiple Choice Questions (**MCQs**), Short Answer Questions (**SAQs**) and Long Answer Questions (**LAQs**).

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating

SECTION A

Answer All Questions (40 Marks).

1. When the allelic genes are alike, that person is said to be:

- a) Heterozygous
- b) Hemizygous
- c) Recessive
- d) Homozygous

2. 22% Bovine albumin is added to a test in order to:

- a) Lower the di-electric constant
- b) Increase the repulsion between the red cells
- c) Increase the zeta-potential
- d) Decrease the zeta-potential

3. Pre-treatment of red blood cells with enzymes:

- a) Increases the charged particles
- b) Exposes the antigenic sites on the Rbcs
- c) Digests the red blood cells membrane exposing the antibodies
- d) Preserves antigenic sites

4. The following parents can give rise to offsprings of all the four ABO blood groups:

- a) Group A and B parents
- b) Group B and AB parents
- c) Group A and AB parents
- d) Group AB and O parents

5. The precursor substance is first acted upon by:

- a) A gene
- b) O gene
- c) B gene
- d) H gene

6. Bombay phenotype individuals:

- a) Have antigens A and B in their red blood cells
- b) Have antibodies A and B only in serum
- c) Lack ABO antibodies only in serum
- d) Are universal recipients

7. An individual grouped as Du positive:

- a) Is rhesus negative
- b) Lacks all rhesus antigens
- c) Is rhesus null phenotype
- d) Is rhesus positive

8. A cross-match will:

- a) Prevent immunization
- b) Detect errors in ABO-typing
- c) Guarantee normal survival of donors rbc's in the recipient
- d) Not detect errors in ABO grouping

9. Rhogam:

- a) Is a purified gamma D globulin
- b) Is a purified gamma E globulin
- c) Coats the maternal red blood cells
- d) Lyses the maternal red blood cells

10. Substances that are capable of reacting with antibodies but do not stimulate antibody formation are called:

- a) Carrier molecules
- b) Haptens
- c) Immunogens
- d) Carbohydrates

11. The best storage temperature for donated blood awaiting crossmatch is:

- a) 0-10° C
- b) 18-25° C
- c) 20-24° C
- d) 2-8° C

12. Rhesus null red cells:

- a) React with all rhesus antibodies
- b) React with anti-D only
- c) Are commonly found in Africans
- d) May exhibit stomatocytosis

13. Cells are washed to:

- a) Make them clean
- b) Avoid haemolysis
- c) Remove unwanted proteins
- d) Avoid agglutination

14. Anti H can be prepared from the following phytagglutinin:

- a) *Iberis amara*
- b) *Dolichos biflorus*
- c) *Vicia graminea*
- d) *Ulex europeus*

15. The purpose of reverse grouping is to check:

- a) Antigens in red blood cells
- b) Agglutinins in serum
- c) Agglutinins in plasma
- d) Agglutinins in red blood cells

16. The following facts refers to complements:

- a) Can be preserved at -50 for a maximum of 48hrs
- b) Can be destroyed by heating at 56o C or above
- c) Promote inflammatory response
- d) Are not found in fresh normal plasma

17. Indirect coomb's test detects:

- a) Maternal antibodies in HDNB
- b) Paternal antibodies in HDNB
- c) Foetal antigens
- d) Maternal antigens

18. The most reliable grouping technique is:

- a) Slide method
- b) Micro-well method
- c) Tile method
- d) Tube method

19. Antihuman globulin is obtained from:

- a) Immunized mothers
- b) Bovine
- c) Hybrid rabbit
- d) Lectins

20. Pyrogens are mostly the common causes of:

- a) Toxicity
- b) Allergic reactions
- c) Anaphylactic reactions
- d) Febrile reactions

SECTION B: SHORT ANSWER QUESTIONS (40 MARKS)

ANSWER ALL QUESTIONS

1. Explain five reasons for washing of red blood cells (RBCs) during cross-matching of blood for transfusion (8 marks)
2. Discuss in details, the major types of immunohematology facilities (8 marks)
3. Outline the steps of Direct Coombs Test and state its significance in transfusion service (8 marks)
4. State and explain stages of antigen –antibody reactions including factors affecting each stage (8 marks)
5. Describe chromosome locations for ABO and Rhesus blood groups (8 marks)

SECTION C: LONG ANSWER QUESTIONS (60MKS)

ANSWER ALL QUESTIONS IN THIS SECTION

1. Discuss gamma globulins in terms of structure, parts, classes and characteristics (20mks)
2. Discuss ABO discrepancies in regard to definition, kinds and general rules to resolve them (20 marks)
3. (i) Discuss the different phases of the crossmatch technique (10 marks)
(ii) Discuss quality assurance in blood bank (10 marks)