



(University of Choice)

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

**(MAIN CAMPUS)**

**UNIVERSITY EXAMINATIONS (MAIN PAPER)  
2017/2018 ACADEMIC YEAR**

**SECOND YEAR SECOND TRIMESTER EXAMINATIONS**

**FOR THE DEGREE  
OF  
BACHELOR OF MEDICAL LABORATORY SCIENCES**

**COURSE CODE: BML 224**

**COURSE TITLE: BLOOD TRANSFUSION SCIENCE**

**DATE: JULY 2018**

**TIME:**

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**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**). Answer all questions.

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over  
**MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS**

**BSc. IN MEDICAL LABORATORY SCIENCES**

**JUNE-SEPTEMBER 2017/18 SEMESTER**

**BML 224: BLOOD TRANSFUSION SCIENCE**

**TIME: 2 HOURS**

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**INSTRUCTIONS:**

1. Do not write anything on this question paper
2. Answer ALL questions in Section A and B (Compulsory). In section C, Answer question ONE (Compulsory) and any other question.

**SECTION A (ANSWER ALL QUESTIONS)-20 MARKS**

1. Direct Coomb's test is routinely used to investigate all the following EXCEPT?
  - A. Haemolytic transfusion reaction
  - B. Autoimmune haemolytic anaemia
  - C. Unexpected serum alloantibody
  - D. Haemolytic disease of the newborn
  - E. To predict the occurrence of HDN
2. Apheresis is described as a procedure:
  - A. Carried out to harvest a particular component and return the rest of the blood to the donor, by an automated machine
  - B. Should be carried out only in a blood bank of a referral hospital
  - C. Only done in advanced countries
  - D. Carried out to screen organs for transplant
  - E. None of the above
3. Once a baby affected with severe Haemolytic Disease of the newborn (HDNB) ,the greatest concern is?
  - A. Built-up of unconjugated bilirubin in the brain
  - B. Built-up of conjugated bilirubin in the brain
  - C. The presence of positive direct antiglobulin test
  - D. Presence of a positive antibody screen.
  - E. Development of anaemia
4. Hepatitis surface antigen can cause?
  - A. Sickle cell anaemia
  - B. Pneumonia.
  - C. Jaundice.
  - D. Coagulation disorder
  - E. Thrombocytopenia
5. ABO antigens can first be detected at?
  - A. 3 months of foetal life
  - B. At birth
  - C. 3 months after birth
  - D. 6 months after birth
  - E. 6 months of foetal life
6. Which of the following can cause a false positive result in indirect Coombs test ?
  - A. Improper washing
  - B. Heavy cell suspension

- H. Contaminated sample
  - I. Inactive antiglobulin serum
  - J. None of the above
7. In Kenya, donated blood should be screened for the following transmissible diseases except?
- A. HIV
  - B. Syphilis
  - C. Hepatitis B
  - D. Hepatitis C
  - E. Malaria
8. Which one of the following are sources of error in Rhesus typing EXCEPT?
- A. Use of high cell concentration.
  - B. Centrifugation at a very low speed for a short time.
  - C. Excessive centrifugation.
  - D. Use of very low cell concentration.
  - E. Use of impotent or contaminated reagent
9. Which of the following is transmissible disease is likely to cause jaundice?
- A. Hepatitis B
  - B. Syphilis
  - C. HIV I and II
  - D. HTLV I and II
  - E. None of the above.
10. What is the appropriate volume of donated blood?
- A. 450 ml.
  - B. 1 litre.
  - C. 200 ml.
  - D. 225 ml.
  - E. 350 ml.
11. The role of albumin in blood transfusion science techniques is to?
- A. Enhance antibody antigen reaction.
  - B. Increase antibody titre.
  - C. Increase antigen titre.
  - D. Neutralize antigen antibody reaction.
  - E. To provide optimum pH for the reaction.
12. Which of the following statements best define the term “Haemovigilance” as used in blood transfusion science?
- A. Organized surveillance procedures related to serious adverse or unexplained events in donor or recipient and epidemiological follow-up of the donor
  - B. Safety precautions considered while transfusion the recipient
  - C. Adherence to the standard operating procedures in screening blood for blood safety.
  - D. Typing of donor’s blood before transfusion.
  - E. Treatment of recipients as a result of transfusion reactions.
13. Which of the following is the possible genotypes is for the phenotype A?
- A. AA and OO.
  - B. AA and AO.
  - C. BB and BO.
  - D. AB.
  - E. AB and OO.
14. Cryoprecipitate contain the following coagulation factors
- A. Factor VII

- B. Factor IV
  - C. Factor VIII and fibrinogen
  - D. Factor V and fibrinogen.
  - E. Factor XIII
15. Which of the following transfusion techniques can be used to determine the strength of an offending antibody responsible for a transfusion reaction?
- A. Antibody screening
  - B. Antibody titration
  - C. Antibody identification
  - D. Indirect Coombs test.
  - E. Direct Coombs test.
15. The first step in dealing with a suspected hemolytic transfusion reaction should be to:
- A. Send a properly labeled specimen to the blood bank
  - B. Evaluate the patient
  - C. Stop the transfusion
  - D. Administer crystalloid
  - E. Regroup both the donor and the patient's blood
16. Erythroblastosis fetalis, also known as hemolytic disease of the newborn, most often occurs in \_\_\_\_\_ mothers carrying \_\_\_\_\_ fetuses.
- A. Rh+; Rh-
  - B. Rh-; Rh+
  - C. Type A; type O
  - D. Type B; Type A
  - E. None of the above
17. Mothers of infants with clinically apparent ABO-Hemolytic Disease of the Newborn are more likely to be of which blood group?
- A. A
  - B. B
  - C. AB
  - D. O
  - E. Equally likely among ABO groups
18. Which one of the following involves haemolysis of RBCs outside the blood vessels?
- A. Extravascular haemolysis.
  - B. Intravascular haemolysis.
  - C. Anaphylaxis.
  - D. DIC.
  - E. Fibrinolysis
19. Which of the following enzymes is used in transfusion science?
- A. Amylase
  - B. alanine aminotransferase
  - C. Papain
  - D. Aspartate aminotransferase
  - E. Alkaline phosphatase
20. Which of the following sugars is responsible for the formation of B antigen after the formation of H-active substance in the ABO system?
- A. D galactose
  - B. N-acetyl galactosamine

- C. D-fucose
- D. L-galactose
- E. Both L-galactose and N-acetyl galactosamine

**SECTION B-STRUCTURED QUESTIONS (ANSWER ALL QUESTIONS)-40 MARKS**

- 1) briefly discuss ABO protection with regard to HDBN [10 marks]
- 2) List 5 criteria for indication of exchange transfusion [5 marks]
- 3) Outline the preparation of cryoprecipitate and list any of its 2 indications [5 marks]
- 4) Write immune antibodies [10 marks]
- 5) Differentiate between major and minor cross match [5 marks]
- 6) List 5 advantages of autologous blood transfusion [4 marks]

**SECTION C (QUESTION ONE IS COMPULSORY THEN CHOOSE ANY OTHER**

**QUESTION)-30 MARKS**

- 1) I. Briefly classify and describe blood transfusion reactions. [10 marks]  
II. Briefly discuss **FIVE (5)** laboratory investigations of blood transfusion reactions giving reason of each test. [10 marks]
- 2) Describe the following special techniques as used in blood transfusion giving at least one application of each  
I. Absorption  
II. Adsorption  
III. Elution  
IV. Antibody screening [20 marks]
- 3) Compare and contrast Haemolytic disease of the Newborn due to Rhesus and ABO blood group systems. [20 marks]