



(University of Choice)

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

**MAIN CAMPUS**

**UNIVERSITY EXAMINATIONS  
2018/2019 ACADEMIC YEAR**

**SECOND YEAR SECOND SEMESTER EXAMINATIONS**

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

**COURSE CODE: BML 224**

**COURSE TITLE: BLOOD TRANSFUSION SCIENCE**

**DATE: 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 6 Printed Pages. Please Turn Over.

**BML 224: BLOOD TRANSFUSION II**

## SECTION A: MULTIPLE CHOICE QUESTIONS (20 marks)

- Q1. The followings are correct about severe hemolytic transfusion except:
- a) Can always be prevented by in vitro testing
  - b) Are usually due to human failure to follow established procedure
  - c) Occur relatively more often in patients previously transfused or exposed to blood.
  - d) Often cause acute tubular necrosis
- Q2. Rh negative mothers may have been sensitised to Rh-positive blood of the following except:
- a) A second trimester abortion
  - b) A childhood blood transfusion
  - c) Being an Rh negative child of an Rh positive mother
  - d) A previous pregnancy with an Rh negative baby
- Q3. Fresh plasma is the component of choice in the management of:
- a) Factor V deficiency
  - b) Factor VII deficiency
  - c) Hemophilia
  - d) Factor X deficiency
- Q4. The risk of transfusing blood containing hepatitis B surface antigen as compared to blood negative for this is:
- a) Increased
  - b) Decreased
  - c) Increased only in patients who have not previously transfused
  - d) Identical
- Q5. Massive transfusion of stored whole blood has been shown not to be associated with:
- a) Change in Acid-Base balance
  - b) Hypermagnesemia
  - c) Hypocalcemia and hyperkalemia
  - d) Clotting deficiencies
- Q6. Platelet transfusion should be given:
- a) When the platelet count is less than 20000
  - b) B. When the patient bleeding and the platelet count less than 20000 due to hypoplasia
  - c) In cases of drug purpura
  - d) In DIC

- Q7. Stored plasma (4 for 21 days) is suitable for replacement of all the following except:
- a) Prothrombin
  - b) Factor VIII
  - c) Factor IX
  - d) Factor VII
- Q8. Blood group testing
- a) Can establish maternity
  - b) Can exclude maternity
  - c) Can occasionally establish paternity
  - d) Can exclude paternity
- Q9. Which of the following cannot be performed on cord blood
- a) ABO and D grouping
  - b) Direct antiglobulin test
  - c) Bilirubin for D-negative babies
  - d) Haemoglobin
- Q10. Which of the following is not true of ABO haemolytic disease of the newborn
- a) Only group-O individuals make high titres of IgG anti-A and anti-B
  - b) A and B infants of group-O mothers are protected from ABO-haemolytic disease of the newborn
  - c) The foetus is protected against anti-A and anti-B by relative weakness of A and B antigens on foetal red cells
  - d) The foetus is protected against anti-A and anti-B by A and B glycoproteins in foetal fluids and tissues diverting maternal IgG from red cells
- Q11. Which of the following are not alternatives to transfusion
- a) Preoperative autologous donation
  - b) Erythropoietin
  - c) Intraoperative conservation techniques
  - d) Blood substitutes
- Q12. Cryoprecipitate
- a) Should be irradiated
  - b) Is rich in Factor IX
  - c) Is rich in Fibrinogen and Factor VIII
  - d) Is the preferred treatment for coagulation factor deficiencies

- Q13. Which of the following is not true regarding hazards during and after blood collection?
- a) Fainting and nausea
  - b) Development of hematoma
  - c) Convulsion
  - d) At the first sign of reaction call the blood bank physician
- Q14. Transfusion associated Graft versus Host Disease
- a) Can affect patients who have depressed T-cell immunity
  - b) Is responsive to steroids
  - c) Manifests within 48 hours of transfusion
  - d) The national blood transfusion services maintains a national registry
- Q15. A 5-month-old male infant has a specimen sent to a blood bank for Type and Screen and a request for 2 units of packed red blood cells to be crossmatched. The results of the initial testing are as follows:
- Patient Red cells + anti-A reagent: 3+
  - Patient Red cells + anti-B reagent: Negative
  - Patient Red cells + anti-D reagent: 3+
  - Patient serum + group A red cells: Negative
  - Patient serum + group B red cells: Negative
  - Direct antiglobulin test: Negative
- The most likely interpretation of these results is:
- a) Expected results for Group A, Rh (D) positive infant
  - b) Discrepancy in the forward and reverse ABO typing results due to laboratory error
  - c) Group A, Rh(D) positive with subgroup of A
  - d) Group AB, Rh (D) positive with subgroup of A.
  - e) Absence of isohemagglutinins suggests child may have Wiskott-Aldrich syndrome
- Q16. The first plastic blood bag was invented in 1950 by?
- a) Carl Walter
  - b) Karl Landsteiner
  - c) James Blundell
  - d) Richard Lower

- Q17. Quality control of blood bank equipment include the following except:
- Maintenance of centrifuge and water bath
  - Adjusting of centrifuge while separating plasma
  - Checking centrifuge speed and actual revolution perminute using tachometer
  - Monitoring water bath temperature for detection of antibody
- Q18. What are the common risks of donating blood?
- Contract common viruses
  - Bacterial infection
  - Low blood pressure
  - None of the above
- Q19. How much blood usually is donated at a time?
- 473 ml
  - 946 ml
  - 950 ml
  - 1000 ml
- Q20. Acute hemolytic transfusion reactions:
- Are rarely fatal
  - Are usually due to clerical error
  - Are best treated with automated red cell exchange
  - May be prevented by pre-treatment with corticosteroid

**SECTION B: SHORT-ANSWER QUESTIONS (40 MARKS)**

- Q1. Compare the main types of anticoagulants used in blood bank (8 marks).
- Q2. State the laboratory investigations for patient with a suspected transfusion reaction (8 marks).
- Q3. State any eight blood transfusion reactions (8 marks).
- Q4. Explain the mechanisms of immune-mediated transfusion reactions (8 marks).
- Q5. State the criteria for selecting a blood donor (8 marks).

**SECTION C: LONG-ANSWER QUESTION (40 MARKS)**

- Q1. Explain the reasons for washing of red blood cells during cross-matching of blood for transfusion (20 marks).
- Q2. Describe direct and indirect Coombs tests (20 marks).