



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF HEALTH AND APPLIED SCIENCES

DEPARTMENT OF HEALTH SCIENCES

QUALIFICATION : BACHELOR OF MEDICAL LABORATORY SCIENCES	
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COURSE CODE: IMH612S	COURSE NAME: IMMUNOHAEMATOLOGY
SESSION: JANUARY 2019	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

SUPPLEMENTARY/SECOND OPPORTUNITY EXAMINATION PAPER	
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INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions.2. Write clearly and neatly.3. Number the answers clearly.

THIS QUESTION PAPER CONSISTS OF 6 PAGES (including this front page)

SECTION A (33 MARKS)

QUESTION 1

[15]

Evaluate the statements in each numbered section and select the most appropriate answer or phrase from the given possibilities. Write the appropriate letter next to the number of the statement/phrase.

1.1 A gene that produces no detectable product is referred to as? (1)

- (A) A regulator gene
- (B) An allele
- (C) An Amorph
- (D) A null gene

1.2 Which ABO discrepancy best explains the following results? (1)

Forward Typing		Reverse Grouping	
Anti-A	Anti-B	A1 Cells	B cells
4	0	0	0

- (A) Subgroup of A
- (B) Mixed field reactions
- (C) Immunocompromised patient
- (D) These results are correct

1.3 What are the gene products of the A and B genes? (1)

- (A) Transferase Enzymes
- (B) Glycoproteins
- (C) Oligosaccharides
- (D) Glycolipid

1.4 The immunoglobulin class primarily associated with ABO antibodies is? (1)

- (A) IgG
- (B) IgM
- (C) IgE
- (D) IgA

1.5 A 25-year-old female was rushed to the hospital after a motor vehicle accident, she needs emergency red cell concentrate however, the stocks at the blood bank are running low. What is the best blood group to issue her? (1)

- (A) Fully crossmatched group specific
- (B) O+
- (C) O-
- (D) AB-

- 1.6 The Rh null phenotype is associated with? (1)
- (A) Elevated D antigen expression
 - (B) Weak D expression
 - (C) The Bombay phenotype
 - (D) Red blood cell membrane abnormalities
- 1.7 How would you distinguish between anti-Fy^a and anti Jk^a when dealing with multiple antibody identification? (1)
- (A) Lowering patient's serum pH
 - (B) Using LISS
 - (C) Treating panel with enzymes
 - (D) Longer incubation periods
- 1.8 All of the following antibodies are of class IgG except: (1)
- (A) Anti-Jk^b
 - (B) Anti-N
 - (C) Anti-K
 - (D) Anti-E
- 1.9 Which phenotype is associated to with resistance to malaria? (1)
- (A) Fy(a-b-)
 - (B) Fy (+b+)
 - (C) Jk (a-b-)
 - (D) Le (a+b+)
- 1.10 An antibody was detected in the screen at 37C and did not react at the AHG phase. Which of the following antibodies do you suspect? (1)
- (A) Anti-S
 - (B) Anti-E
 - (C) Anti-N
 - (D) Anti-Jk^a
- 1.11 Identify the best product used to treat Idiopathic Thrombocytopenic Purpura? (1)
- (A) Plasma
 - (B) Platelet
 - (C) Cryoprecipitate
 - (D) Whole blood

- 1.12 A patient has experienced two febrile reactions following transfusion with red cells. What is the preferred blood component if future transfusions are necessary? (1)
- (A) Leucocyte Reduced Red Blood Cells
 - (B) Irradiated Red Blood Cells
 - (C) CMV-negative red blood cells
 - (D) Group O Rh-negative red
- 1.13 Which of the following tests is not necessary when testing cord blood? (1)
- (A) DAT
 - (B) ABO
 - (C) Rh
 - (D) Antibody screen
- 1.14 Patients receiving blood products from directed donors are at risk of which of the following adverse effects of transfusions? (1)
- (A) Febrile
 - (B) Acute Immune Haemolytic Reactions
 - (C) Graft versus host
 - (D) TRALI
- 1.15 Which of the following haematological disorders can be treated by therapeutic blood bleeding? (1)
- (A) Anaemia
 - (B) Hodgkin's Lymphoma
 - (C) Essential Thrombocythemia
 - (D) Polycythaemia Vera

QUESTION 2**[10]**

Define the following terms:

2.1 Immunodominant Sugar

2.2 Exchange Transfusion

2.3 Compatibility testing

2.4 Neutralization

2.5 Hemovigilance

QUESTION 3

[8]

Using the Genotype in column A, predict the secretions and phenotype of the Lewis blood group system by completing the following table: (8)

Genes	Antigens in Secretions	Phenotype
<i>Le sese H</i>		
<i>L Se H</i>		
<i>lele sese H</i>		
<i>lele Se H</i>		
<i>Le sese hh</i>		
<i>Le Se hh</i>		
<i>lele sese hh</i>		
<i>lele Se hh</i>		

SECTION B (23 MARKS)

QUESTION 4

[12]

4.1 Outline the differences between the Fischer Race and Weiner Rh terminology: (6)

4.2 Demonstrate characteristics of antibodies of the Rh system (4)

4.3 What is Rh null? (2)

QUESTION 5

[11]

5.1 Proteolytic enzymes are usually used as potentiators in antibody/antigen reactions. How do proteolytic enzymes enhance antibody antigen reactions? (3)

5.2 What is the difference between one stage and two stage enzyme procedures? (4)

5.3 Enzymes can enhance antibody reactions but can also destroy antigens of some blood group systems, making it difficult to identify these antibodies. Identify two antibodies enhanced by enzymes and two antigens destroyed by enzymes. (2)

5.4 Mention two other potentiating agents used in the transfusion laboratory? (2)

SECTION C (44 MARKS)

QUESTION 6

[22]

6.0 A 23-year-old was rushed into the emergency room with gunshot wounds. They immediately sent in a sample to the blood bank. The clinician requested 6 units of RCC and 3 units of platelets on emergency order. He indicated that they have already issues 4 units of RCC from the hospital emergency fridge. Below is a table of her type and screen

Forward Typing				Reverse Typing		Antibody Screen	
Anti-A	Anti-B	Anti-AB	Anti-D	A cell	B cells	Screen 1	Screen2
0	4mf*	4	4	3	0	0	0

6.1 Interpret and comment on the compatibility results of the patient (5)

6.2 Discuss the guidelines for administering blood products in emergency requests? Provision must be to expedite release of blood in case of emergencies (10)

6.3 Explain the indications of the products ordered in this specific scenario? (2)

6.4 The doctor calls and indicates that the patient has hypofibrinogenemia. Were the blood products used appropriate for this patient? Explain your answer, if your answer is no, suggest appropriate product (s) to use (5)

QUESTION 7

[22]

7.1 Discuss the Rh haemolytic disease of foetus and new-born under the following headings:

- a) Pathogenesis (8)
- b) Laboratory Investigations (postpartum) (6)
- c) Management and treatment (before and after birth) (8)

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