NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, APPLIED SCIENCES AND NATURAL RESOURCES

DEPARTMENT OF CLINICAL HEALTH SCIENCES

QUALIFICATION : BACHELOR OF MEDICAL LABORATORY SCIENCES	
QUALIFICATION CODE: 08BMLS	**LEVEL:** 6
COURSE CODE: IMH621S	**COURSE NAME:** IMMUNOHAEMATOLOGY
SESSION: **NOVEMBER 2024**	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 100

FIRST OPPORTUNITY EXAMINATION PAPER	
EXAMINER(S)	**Ms AUNE SEKETA-ILLARIUS**
MODERATOR:	**Ms EDWIG SHINGENGE**

INSTRUCTIONS
1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly. 4. Non-programmable calculators allowed.

THIS QUESTION PAPER CONSISTS OF 5 PAGES (Including this front page)

SECTION A: SHORT QUESTIONS [30 MARKS]

QUESTION 1 [10]

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 Identify the immunoglobulin class capable of crossing the placenta: (1)

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

1.2 Which of the following events occur during storage of red blood cells: (1)

(A) 2,3 DPG increase
(B) ATP increased
(C) Potassium increases
(D) pH Increases

1.3 How long can one retain a sample for compatibility testing? (1)

(A) 1 day
(B) 42 days
(C) 7 days
(D) 3 days

1.4 How would you grade an agglutination reaction if you observe several large agglutinates with a clear background? (1)

(A)1+
(B)2+
(C)3+
(D)4+

1.5 What term describes the inheritance of 2 of the same alleles from each parent? (1)

(A) Homozygous
(B) Heterozygous
(C) Amorph
(D) Synthetics

1.6 Which of the following is not necessary when testing an infant sample? (1)

(A) ABO grouping
(B) RH grouping
(C)DAT
(D)Antibody Screen

1.7 Which of the following antigens is poorly developed on cord blood? (1)

(A) K
(B) M
(C) Le^b
(D) D

1.8 What is the chemical composition of an antibody?

(A) Glycoprotein (1)
(B)Protein
(C) Carbohydrate
(D) Lipid

1.9 Which lectin agglutinates A_1 red cells?

(1)

(A) Ulex europaes
(B) Dolichos biflorus
(C) Dolichos europaes
(D) Ulex biflorus

1.10 When should an accident or injury be reported in the lab?

(1)

(A) If the injury may result in fatality
(B) If the injury involves possible infections with HIV or HBV
(C) if the accident involves non-employees or jeopardizes a patient
(D) At the time the accident or injury occurs

QUESTION 2 **[10]**

Answer the following statements **True or false**. Provide reason for your answer.

2.1 The k antigen is a high frequency antigen.

(2)

2.2 Haemolysis as a result of antigen antibody reactions is considered a positive result.

(2)

2.3 Mature red cells are nucleated biconcave disks.

(2)

2.4 Non maleficence means to always act in the best interest of the patient.

(2)

2.5 Jk(a-b-) shows resistance to the malaria parasite *Plasmodium vivax.*

(2)

QUESTION 3 **[10]**

Briefly define the following terms, where possible give examples.

3.1 Heparin (2)

3.2 Apheresis (2)

3.3 Window period (2)

3.4 Cryoprecipitate (2)

3.5 Autologous donation (2)

SECTION B: LONG QUESTIONS [30 MARKS]

QUESTION 4 **[30]**

4.1. Describe safety precautions that can be taken to prevent laboratory acquired infections. (5)

4.2. Define and explain Landsteiner's rule using Group B as the example. (4)

4.3. Identify any four Transfusion Transmissible Infections tested for by the Blood Transfusion Service of Namibia. (4)

4.4. Write notes on Nucleic Amplification Testing in relation to Blood transfusion. (8)

4.5. Quality is an essential part of any organization. Discuss the following quality practices in a blood service.

4.5.1 Quality Audits and accreditation (3)

4.5.2 Corrective and Preventative action (4)

4.5.3 Proficiency Testing (2)

SECTION C: APPLICATION BASED [40 MARKS]

QUESTION 5 **[12]**

Complete the table below relating to the following Blood Products (duplicate table into answer sheet). (12)

Blood Product	Storage Temperature	Indications	Shelf Life
5.1 Whole Blood			
5.2 Fresh frozen Plasma			
5.3 Apheresis platelet			
5.4 Cryoprecipitate			

[8]

QUESTION 6

You receive a routine antenatal sample from a lady in her second trimester of pregnancy. Evaluate the results below and answer the following questions.

Anti A	Anti B	Anti A,B	Anti D	A1 cells	A2 Cells	B Cells
0	4	4	4	4	4	0

Screen Cells 1			Screen Cells 2		
20°C	37°c	AHG	20°C	37°C	AHG
0	3	4	0	0	0

6.1 Interpret the blood group of the sample. (2)

6.2 Comment on the antibody screens. (2)

6.3 The patient was found to have an unexpected Anti K-with a titre of 256. What processes need to be followed during the remainder of the pregnancy and state what further tests need to be done. (4)

[10]

QUESTION 7

A 16-year-old grade 10 boy is excited to donate blood for the first time at school. At the first station, his weight is taken and recorded as 54.3kg. Next her haemoglobin gets measured at 12.7g/dL. He proceeds to complete the questionnaire. (4)

7.1. Does he qualify to donate blood? Substantiate your answer. (5)

7.2. Mention five criteria used for the protection of the recipient. (1)

7.3 Identify the part of the human body from which blood for transfusion is drawn.

QUESTION 8 **[10]**

Mr Johnson a 59-year-old regular donor suffering from a condition where the ulcers in his colon have turned septic due to an infection and requires an operation. His doctor said that he will need a transfusion since his haemoglobin levels are currently at 11.5g/dL. Mr Johnson decides that he will donate for himself (1)

8.1. What is the type of donation that Mr Johnson opted for classified as? (3)

8.2 Will his donation be accepted to donate? Give reasons for you answer (6)

8.3 What are some of the advantages and disadvantages of this donation? Give 3 examples of each

THE END [100 MARKS TOTAL]