



*“Investing in Africa’s Future”*

**COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES**

**DEPARTMENT OF BIOMEDICAL AND LABORATORY SCIENCES**

**BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS**

**END OF SEMESTER EXAMINATIONS**

**NSLS406: BLOOD BANK II**

**NOVEMBER 2024**

**LECTURER: PROF. EMMANUEL OBEAGU**

**DURATION: 3 HOURS**

***INSTRUCTIONS***

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1. Write your candidate number on the space provided on top of each page
  2. Answer **all** questions in sections A on the question paper.
  3. Answer **all** questions in section B on separate answer sheets provided.
  4. Answer any **3** questions in section C on separate answer sheets provided
  5. Mark allocation for each question is indicated at the end of the question
  6. Credit will be given for logical, systematic and neat presentations in sections B and C
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**SECTION A (MULTIPLE CHOICE): 20 MARKS**

**Instruction: Answer all questions by encircling the correct response T for TRUE or F for FALSE for each statement in all the questions**

1. Which type of hypersensitivity reaction involves IgE and mast cells?

A) Type I	T or F
B) Type II	T or F
C) Type III	T or F
D) Type IV	T or F
E) Type V	T or F
  
2. Which hypersensitivity type is responsible for autoimmune hemolytic anemia?

A) Type I	T or F
B) Type II	T or F
C) Type III	T or F
D) Type IV	T or F
E) Type V	T or F
  
3. Which of the following diseases is NOT classified as autoimmune?

A) Systemic lupus erythematosus	T or F
B) Rheumatoid arthritis	T or F
C) Diabetes mellitus type 1	T or F
D) Hepatitis C	T or F
E) Graves' disease	T or F
  
4. In autoimmunity, self-tolerance failure often involves:

A) Pathogen antigens	T or F
B) MHC restriction	T or F
C) Hypersensitivity	T or F
D) Loss of regulatory T-cell function	T or F

E) Hypergammaglobulinemia **T or F**

5. Tumor antigens expressed in multiple types of tumors but not normal tissue are called:

A) Oncogenes **T or F**

B) Tumor-specific antigens **T or F**

C) Tumor-associated antigens **T or F**

D) Neoantigens **T or F**

E) Self-antigens **T or F**

6. Immune checkpoint inhibitors target:

A) Cytotoxic T cells **T or F**

B) PD-1 and CTLA-4 pathways **T or F**

C) NK cell receptors **T or F**

D) Cytokine release **T or F**

E) Dendritic cells **T or F**

7. Which of the following is an example of primary immunodeficiency?

A) HIV infection **T or F**

B) Diabetes mellitus **T or F**

C) Systemic lupus erythematosus **T or F**

D) Severe Combined Immunodeficiency (SCID) **T or F**

E) Tuberculosis **T or F**

8. Secondary immunodeficiency can result from all of the following EXCEPT:

A) HIV infection **T or F**

B) Chemotherapy **T or F**

C) Severe malnutrition **T or F**

D) Genetic mutation in immune cells **T or F**

E) Aging **T or F**

9. Which blood product is typically used in neonatal transfusions?

- A) Whole blood **T or F**
- B) Fresh frozen plasma **T or F**
- C) Red blood cells **T or F**
- D) Platelets **T or F**
- E) Leukocyte-rich plasma **T or F**

10. What is the most common cause of febrile transfusion reactions?

- A) Bacterial contamination **T or F**
- B) ABO incompatibility **T or F**
- C) HLA antibodies **T or F**
- D) Iron overload **T or F**
- E) Allergic response **T or F**

11. A positive direct antiglobulin test (DAT) is used to detect:

- A) Autoantibodies on RBCs **T or F**
- B) Antibodies in plasma **T or F**
- C) Bacterial antigens **T or F**
- D) Viral RNA **T or F**
- E) Protein levels **T or F**

12. Hemolytic disease of the newborn (HDN) is caused by:

- A) ABO incompatibility **T or F**
- B) Rh incompatibility **T or F**
- C) Platelet antibodies **T or F**
- D) HLA antigens **T or F**
- E) Leukocyte antigens **T or F**

13. Which blood product is most commonly transfused?

- A) Platelets **T or F**
- B) Fresh frozen plasma **T or F**
- C) Red blood cells **T or F**

- D) Whole blood **T or F**
- E) Cryoprecipitate **T or F**

14. Which antibody class is primarily involved in hemolytic disease of the newborn?

- A) IgA **T or F**
- B) IgD **T or F**
- C) IgG **T or F**
- D) IgM **T or F**
- E) IgE **T or F**

15. The Coombs test is used to detect:

- A) Red blood cell antigens **T or F**
- B) White blood cell antigens **T or F**
- C) Platelet antigens **T or F**
- D) Hemolytic antibodies **T or F**
- E) Cytokine levels **T or F**

16. An antibody screen test is primarily used to:

- A) Determine blood type **T or F**
- B) Detect infectious diseases **T or F**
- C) Identify antibodies against blood cells **T or F**
- D) Measure antibody titers in blood **T or F**
- E) Detect autoimmune disease **T or F**

17. Which infection is a significant risk for transfusion-transmitted disease worldwide?

- A) Epstein-Barr virus **T or F**
- B) Cytomegalovirus **T or F**
- C) Malaria **T or F**
- D) Rubella **T or F**
- E) Herpes simplex virus **T or F**

18. Blood donors are routinely screened for which of the following infections?

- |                            |               |
|----------------------------|---------------|
| A) HIV, Hepatitis B, and C | <b>T or F</b> |
| B) Influenza               | <b>T or F</b> |
| C) Measles                 | <b>T or F</b> |
| D) Mumps                   | <b>T or F</b> |
| E) Chlamydia               | <b>T or F</b> |

19. DNA analysis for paternity testing usually focuses on:

- |                              |               |
|------------------------------|---------------|
| A) Mitochondrial DNA         | <b>T or F</b> |
| B) Autosomal markers         | <b>T or F</b> |
| C) Y chromosome markers only | <b>T or F</b> |
| D) X chromosome markers only | <b>T or F</b> |
| E) Red blood cell markers    | <b>T or F</b> |

20. Which of the following can complicate paternity testing in transfusion cases?

- |   |               |
|---|---------------|
| A) Incomplete medical history               | <b>T or F</b> |
| B) Blood transfusions in the alleged father | <b>T or F</b> |
| C) Blood transfusions in the child          | <b>T or F</b> |
| D) ABO incompatibility                      | <b>T or F</b> |
| E) Gender of the child                      | <b>T or F</b> |

### **SECTION B: 20 MARKS**

**Instruction: Answer all questions on separate answer sheets provided**

1. Outline the serological tests used to detect haemolytic disease of the newborn. **10 Marks**
2. Outline the steps involved in safe blood transfusion practice. **10 Marks**

### **SECTION C: 60 MARKS**

**Instruction: Answer any 3 questions from this section on separate answer sheets provided**

1. Identify and explain the types of transfusion reactions **20 Marks**

2. Explain the clinical and laboratory findings in haemolytic disease of the newborn (HDN)  
**20 Marks**
3. Discuss the laboratory approaches in antibody screening and identification **20 Marks**
4. List common transfusion-transmissible infections and the methods for screening **20 Marks**
5. Describe the ELISA technique and its applications in clinical diagnostics **20 Marks**
6. Discuss the special considerations for neonatal transfusions . **20 Marks**