"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, 2025

LECTURER: PROFESSOR. EMMANUEL OBEAGU

DURATION: 3 HOURS

INSTRUCTIONS

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

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

Each Correctly Answered Question is 1 Mark

1. **Type I hypersensitivity is mediated primarily by:**
   A. IgG   **T or F**
   B. IgE   **T or F**
   C. IgM   **T or F**
   D. T cells   **T or F**
2. **In type II hypersensitivity, tissue injury occurs mainly through:**
   A. Cytotoxic antibodies   **T or F**
   B. Immune complexes   **T or F**
   C. Delayed T-cell response   **T or F**
   D. NK cells only   **T or F**
3. **Hemolytic disease of the newborn due to Rh incompatibility is:**
   A. Type I   **T or F**
   B. Type II   **T or F**
   C. Type III   **T or F**
   D. Type IV   **T or F**
4. **Autoimmune hemolytic anemia is mainly due to:**
   A. IgE   **T or F**
   B. IgM/IgG-mediated cytotoxicity   **T or F**
   C. T-cell cytotoxicity   **T or F**
   D. NK cells   **T or F**
5. **Phenotyping of red cells helps in:**
   A. Identifying antigen presence on RBCs   **T or F**
   B. DNA mutation detection   **T or F**
   C. Coagulation defects   **T or F**
   D. Leukocyte typing only   **T or F**
6. **Tumor cells evade immunity by:**
   A. Upregulating MHC I   **T or F**
   B. Producing immunosuppressive cytokines   **T or F**
   C. Enhancing NK cell activity   **T or F**
   D. Activating macrophages   **T or F**
7. **NK cells recognize tumor cells due to:**
   A. High MHC I   **T or F**
   B. Low/absent MHC I   **T or F**
   C. Presence of IgE   **T or F**
   D. Complement   **T or F**

8. **Acute graft rejection occurs mainly due to:**
   A. NK cells **T or F**
   B. T cell-mediated cytotoxicity **T or F**
   C. Preformed antibodies **T or F**
   D. Macrophages **T or F**
9. **HLA class II molecules are expressed mainly on:**
   A. RBCs **T or F**
   B. Antigen-presenting cells **T or F**
   C. Neutrophils **T or F**
   D. NK cells **T or F**
10. **Hyperacute rejection can be avoided by:**
    A. Cross-match testing **T or F**
    B. Blood typing alone **T or F**
    C. Antibiotics **T or F**
    D. Vaccination **T or F**
11. **Warm autoimmune hemolytic anemia involves:**
    A. IgG antibodies **T or F**
    B. IgM **T or F**
    C. IgE **T or F**
    D. Complement alone **T or F**
12. **Chediak-Higashi syndrome is due to:**
    A. Microtubule defect in neutrophils **T or F**
    B. Complement deficiency **T or F**
    C. NK cell overactivation **T or F**
    D. T cell apoptosis defect **T or F**
13. **Hyper-IgM syndrome is caused by defect in:**
    A. Class switching (CD40L deficiency) **T or F**
    B. NK cell activity **T or F**
    C. Complement activation **T or F**
    D. TLR signaling **T or F**
14. **Example of active immunization:**
    A. Antitoxin administration **T or F**
    B. Rabies vaccine **T or F**
    C. Intravenous immunoglobulin **T or F**
    D. Convalescent plasma **T or F**
15. **ELISA is based on:**
    A. Antigen-antibody binding with enzyme-labeled detection **T or F**
    B. RBC agglutination **T or F**
    C. Complement fixation **T or F**
    D. Fluorescent microscopy only **T or F**
16. **PCR amplifies:**
    A. Proteins **T or F**
    B. DNA **T or F**
    C. Antigens **T or F**
    D. Antibodies **T or F**

17. **Antibody titration is useful in:**
    A. Monitoring hemolytic disease of the newborn   **T or F**
    B. Malaria   **T or F**
    C. Leukemia   **T or F**
    D. Lymphoma   **T or F**
18. **A major risk of repeated transfusions in sickle cell patients is:**
    A. Infections   **T or F**
    B. Alloimmunization   **T or F**
    C. Hypocalcemia   **T or F**
    D. Iron deficiency   **T or F**
19. **The direct antiglobulin test (DAT) detects:**
    A. Antibodies attached to RBCs in vivo   **T or F**
    B. Free antibodies in serum   **T or F**
    C. HLA typing   **T or F**
    D. Complement only   **T or F**
20. **Hemolytic disease of the newborn is most severe in:**
    A. ABO incompatibility   **T or F**
    B. Rh incompatibility   **T or F**
    C. Kell system only   **T or F**
    D. Kidd antibodies   **T or F**

SECTION B: 20 MARKS

Instruction: Answer all questions on separate answer sheets provided

1. Mention five (5) difference between Type II and Type III hypersensitivity reaction
                                                                          5 Marks
2. Compare passive and active immunization   **5 Marks**
3. List five (5) adverse effects of blood transfusion   **5 Marks**
4. Outline five (5) mechanisms by which tumors escape immune surveillance **5 Marks**

SECTION C: 60 MARKS

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

1. Describe the pathophysiology, laboratory diagnosis, and management of hemolytic disease of the newborn (HDN)   **20 Marks**
2. Explain the pathogenesis, laboratory diagnosis, and 5 clinical implications of Type II hypersensitivity reactions in blood transfusion practice   **20 Marks**
3. Discuss the laboratory diagnosis and monitoring of secondary immunodeficiency in HIV infection   **20 Marks**

4. Discuss considerations in neonatal transfusion with emphasis on five (5) indications and five (5) challenges
   20 Marks
5. Give a detailed account of antibody screening, identification, and titration in blood transfusion. **20 Marks**

END