



**AMREF INTERNATIONAL UNIVERSITY  
SCHOOL OF MEDICAL SCIENCE  
DEPARTMENT OF REHABILITATION MEDICINE  
BACHELOR OF SCIENCE IN PHYSIOTHERAPY  
END OF MAY-AUGUST 2024 TRIMESTER EXAMINATIONS**

**UNIT CODE: PHT 122                      UNIT NAME: IMMUNOLOGY (SPECIAL EXAM)**

**DATE:                      MONDAY/ 12TH/ AUGUST**

**TIME:                      TWO HOURS**

**START:                      6PM                                      STOP : 8PM**

**INSTRUCTIONS (physical exams)**

- 1. Do not write on this question paper**  
(Marks and questions distribution as per program curriculum.)

**INSTRUCTIONS (Online examinations)**

1. This exam is marked out of 70 marks
2. This Examination comprises 3 Sections
3. This online exam shall take 2 Hours
4. Late submission of the answers will not be accepted
5. Ensure your web-camera is on at all times during the examination period
6. No movement is allowed during the examination
7. Idling of your machine for 5 min or more will lead to lock out from the exam
8. The Learning Management System (LMS) has inbuilt integrity checks to detect cheating
9. Any aspect of cheating detected during and or after the exam administration will lead to nullification of your exam
10. In case you have any questions call the invigilator for this exam on Tel. 0705833434 and or the Head of Department on Tel 0720491032
11. For adverse incidences please write an email to: [amiu.examinations@amref.ac.ke](mailto:amiu.examinations@amref.ac.ke)

**SECTION I: MULTIPLE CHOICE QUESTIONS**

**(30 MARKS)**

*Attempt ALL questions*

1. The human papillomavirus (HPV) vaccine is an example of which type of vaccine?
  - A. Inactivated vaccine
  - B. Subunit vaccine
  - C. Live attenuated vaccine
  - D. Toxoid vaccine
2. Which of the following is NOT a class of immunoglobulins?
  - A. Ig A
  - B. Ig B
  - C. Ig M
  - D. Ig G
3. The World Health Organization (WHO) established an immunization program known as:
  - A. VACCINE (Vaccination for All Children in Need)
  - B. EPI (Expanded Program on Immunization)
  - C. IVI (International Vaccine Institute)
  - D. GAVI (Global Alliance for Vaccines and Immunization)
4. The major histocompatibility complex (MHC) molecules are crucial for:
  - A. Activation of B cells
  - B. Antibody production
  - C. Antigen presentation to T cells
  - D. Phagocytosis of pathogens
5. The process of antibody-mediated effector mechanisms is most effective against:
  - A. Intracellular bacteria
  - B. Extracellular viruses
  - C. Fungal infections
  - D. Extracellular bacteria and parasites
6. The acquired immune response is specifically activated in response to:
  - A. Allergens
  - B. Self-antigens
  - C. Pathogens or foreign substances
  - D. Inflammation
7. Helper T cells play a critical role in the immune response by:
  - A. Killing infected cells directly
  - B. Producing antibodies
  - C. Activating B cells and cytotoxic T cells
  - D. Phagocytosing pathogens

8. Which of the following cells is primarily responsible for the coordination of the acquired immune response?
- A. B cells
  - B. T cells
  - C. Natural killer cells
  - D. Macrophages
9. The primary function of B cells in the acquired immune response is to:
- A. Directly kill infected cells
  - B. Produce antibodies
  - C. Phagocytose pathogens
  - D. Activate T cells
10. The development of the vaccine for polio is credited to:
- A. Albert Sabin
  - B. Jonas Salk
  - C. Edward Jenner
  - D. Louis Pasteur
11. Which cells are **NOT** responsible for presenting antigens to T cells in the acquired immune response?
- A. Macrophages
  - B. B cells
  - C. Dendritic cells
  - D. Natural killer cells
12. The tetanus vaccine is an example of which type of vaccine.
- A. Inactivated vaccine
  - B. Subunit vaccine
  - C. Live attenuated vaccine
  - D. Toxoid vaccine
13. The differentiation of B cells into plasma cells leads to:
- A. Production of antibodies
  - B. Activation of T cells
  - C. Phagocytosis of pathogens
  - D. Inflammation
14. The process of herd immunity occurs when:
- A. A large proportion of the population is immune, reducing the spread of disease
  - B. Animals are vaccinated against zoonotic diseases
  - C. The immune system attacks healthy cells
  - D. Antibiotic resistance develops in pathogens
15. T helper cells are divided into two major subsets called:
- A. Th1 and Th2 cells
  - B. B cells and plasma cells

- C. Cytotoxic T cells and helper T cells
  - D. Memory T cells and naïve T cells
16. Which type of vaccine is made by inactivating the pathogen using chemicals or heat?
- A. Inactivated vaccine
  - B. Subunit vaccine
  - C. Live attenuated vaccine
  - D. Toxoid vaccine
17. How does normal flora contribute to innate barriers?
- A. They produce antibodies.
  - B. They directly kill pathogens.
  - C. They compete with pathogens for resources and colonization sites.
  - D. They induce inflammation.
18. Memory cells are an important component of the acquired immune response because they:
- A. Recognize self-antigens
  - B. Initiate inflammation
  - C. Provide long-lasting immunity
  - D. Produce cytokines
19. Vaccines work by stimulating the immune system to produce:
- A. Antibodies
  - B. Viruses
  - C. Bacteria
  - D. Antiviral drugs
20. Which of the following diseases was declared eradicated globally through vaccination efforts?
- A. Measles
  - B. Mumps
  - C. Tuberculosis
  - D. Smallpox
21. Antibodies can cross the placenta and provide passive immunity to the developing fetus. This process is mediated by:
- A. IgM antibodies
  - B. IgA antibodies
  - C. IgE antibodies
  - D. IgG antibodies
22. Which type of vaccine is made by using a modified toxin produced by the pathogen?
- A. Inactivated vaccine
  - B. Subunit vaccine
  - C. Live attenuated vaccine
  - D. Toxoid vaccine

23. Which cells are responsible for phagocytosis in the innate immune response?
- A. T cells
  - B. B cells
  - C. Natural killer cells
  - D. Macrophages
24. The recommended immunization schedule for infants and young children includes vaccines for:
- A. Polio, tetanus, and measles
  - B. Influenza, hepatitis B, and pneumonia
  - C. Mumps, rubella, and varicella
  - D. Diphtheria, pertussis, and meningitis
25. What is the role of lysozyme in innate immunity?
- A. It promotes inflammation.
  - B. It neutralizes bacterial toxins.
  - C. It destroys bacterial cell walls.
  - D. It enhances phagocytosis.
26. Which of the following is an example of a chemical barrier in innate immunity?
- A. Fever
  - B. Interferons
  - C. Complement proteins
  - D. Tears containing lysozyme
27. How does the acidic pH of the stomach contribute to innate defense?
- A. It triggers the production of antibodies.
  - B. It directly kills pathogens.
  - C. It enhances the activity of natural killer cells.
  - D. It activates the complement system.
28. Which cells are responsible for producing antimicrobial peptides as part of innate immunity?
- A. Neutrophils
  - B. Macrophages
  - C. Natural killer cells
  - D. Epithelial cells
29. The acquired immune response is specifically activated in response to:
- A. Allergens
  - B. Self-antigens
  - C. Pathogens or foreign substances
  - D. Inflammation
30. Antibodies can activate the complement system by:
- A. Enhancing antigen presentation to T cells
  - B. Binding to pathogens and recruiting complement proteins

- C. Directly killing infected cells
- D. Promoting vasodilation and increased vascular permeability

**SECTION II: SHORT ANSWER QUESTIONS**

**(20 MARKS)**

*Attempt ALL questions*

1. [4 Marks] Explain how B cells contribute to adaptive immunity through antibody production.
2. [4 Marks] Describe the main types of vaccines used in immunization programs.
3. [4 Marks] Outline the role of vaccine efficacy and effectiveness in evaluating the success of immunization programs.
4. [4 Marks] Explain the concept of immunological memory in adaptive immune response.
5. [4 Marks] Describe how does the complement system contribute to innate immune responses.

**SECTION III: LONG ANSWER QUESTION**

**(20 MARKS)**

*Attempt ANY TWO (2) questions*

1. [10 Marks] Discuss the role of helper T cells in coordinating adaptive immune responses.
2. [10 Marks] Discuss the key features and mechanisms of innate immunity, highlighting its importance in the early defense against pathogens.
3. [10 Marks] Discuss the challenges and strategies involved in achieving high vaccination coverage rates in different populations.

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