

**BINDURA UNIVERSITY OF SCIENCE EDUCATION  
FACULTY OF AGRICULTURE AND ENVIRONMENTAL SCIENCE**

**AGA 107 EXAM PAPER 3**

**DEPARTMENT OF ANIMAL SCIENCE  
IMMUNOLOGY**

**3 HOURS (100 Marks)**

**INSTRUCTIONS TO CANDIDATES**

**Answer any FOUR questions. Each question carries 25 Marks**



1. Giving examples, define immunity and describe the following types of immunity;
  - a) Definition and components of the immune system. [5 marks]
  - b) Innate immunity. [5 marks]
  - c) Adaptive immunity. [5 marks]
  - d) Passive immunity. [5 marks]
  - e) Active Immunity. [5 marks]
  
2. Give is the involvement of the given cells in immunity?
  - a) Lymphoid Cells. [2 marks]
  - b) T cells. [2 marks]
  - c) B Cells. [2 marks]
  - d) Natural Killer Cells. [2 marks]
  - e) Mononuclear Phagocytes [2 marks]
  - f) Antigen-Presenting Cells. [2 marks]
  - g) Polymorphonuclear Granulocytes and Platelets. [3 marks]
  - h) Basophils and Mast Cells. [2 marks]
  - i) Platelets. [2 marks]
  - j) Antigens. [2 marks]
  - k) Haptens. [2 marks]
  - l) Mediators of Immunity. [2 marks]
  
3. Discuss the key factors to consider in developing a vaccination strategy. [25 marks]
  
4. Discuss the roles of the cells, tissues and organs listed below in the fight against infections; (25 marks)
  - a) White blood cells. [3 marks]
  - b) Lymph nodes. [3 marks]
  - c) Spleen. [3 marks]
  - d) Tonsils and adenoids. [3 marks]
  - e) Thymus [3 marks]
  - f) Bone marrow. [3 marks]
  - g) Skin, mucous membranes and other first-line defences. [4 marks]
  - h) Stomach and bowel. [3 marks]

5. Highlight the functions of the following immune system components:

- |                                      |           |
|--------------------------------------|-----------|
| a) Antigen.                          | [2 marks] |
| b) Antibody (Ab).                    | [2 marks] |
| c) Basophil.                         | [1 marks] |
| d) B lymphocyte.                     | [2 marks] |
| e) Memory B cell.                    | [1 marks] |
| f) Plasma B cell.                    | [1 marks] |
| g) Cytokine.                         | [1 marks] |
| h) Eosinophil.                       | [1 marks] |
| i) Granulocyte.                      | [1 marks] |
| j) Natural killer (NK) cell          | [1 marks] |
| k) T lymphocyte (also called T cell) | [2 marks] |
| l) Cytotoxic T cell.                 | [1 marks] |
| m) Memory T cell.                    | [1 marks] |
| n) Helper T cell.                    | [1 marks] |
| o) Regulatory T cell.                | [1 marks] |
| p) Macrophage.                       | [2 marks] |
| q) Mast cell.                        | [1 marks] |
| r) Monocyte.                         | [1 marks] |
| s) Neutrophil.                       | [1 marks] |
| t) Phagocytes.                       | [1 marks] |

6. Describe the major components of innate immunity.

[25 marks]

**END OF EXAM PAPER 3**