



Final term Exam  
January 2026

Department: Zoology

Major: رابعة بيولوجيا جزينية

Course Title:

طفيليات ومناعة

Code number: 401 Z

Mark: 90

Date: 22 / 1 / 2026

Time: 2 Hours

الامتحان في 4 صفحات

### PART ONE: PARASITOLOGY (45 Marks)

#### Question One: (24 Marks, 2 marks for each)

1	What is parasitology and when did it start to be systematically studied?
2	How does DNA help parasitologists describe and catalogue parasites?
3	What is the difference between endemic and enzootic infection?
4	How does the stomach act as a defence mechanism against invading microorganisms?
5	What are the specific symptoms of parasitic infections related to the digestive system?
6	Why are some animal groups so successful as parasites while others are not?
7	Mention the classification of parasite life cycle based on the mode of transmission?
8	What dietary changes can help prevent or treat parasitic infections?
9	What is parasite transmission?
10	What is a parametric approach in parasitology?
11	What is the concept of "Genetic Control" in the context of parasites?
12	How are the R and K life cycle strategists differing?

#### Question Two: (21 Marks)

##### A- Complete the following missing parts: (7 Marks; one for each)

- In insects, .....(1)..... is the enzyme responsible for producing melanin?
- Vaccination introduces .....(2)..... or .....(3)..... pathogens to stimulate immunity.?
- B cells develop in the .....(4)..... and produce .....(5).....
- Malaria escapes the .....(6)..... system by changing its surface .....(7).....

##### B- Answer with (Right or False) on the followings: (14 marks, 2 marks for each)

1	Humoral immunity involves the production of antibodies
2	T-cells secrete lymphokines that repress the immune response
3	New molecular and biochemical parasite diagnosis methods offer increased sensitivity, specificity, and speed of results over traditional methods.
4	Polymerase chain reaction (PCR) can detect only a limited number of parasites.
5	Attachment organs (hooks, suckers) are the morphological adaptations of parasites must cling on to the host
6	Hermaphroditism adaptation increases egg production in parasites
7	Monogenean parasites are highly specific for their molluscan host

## PART TWO: IMMUNOLOGY (45 Marks)

### Question Three:

(25 Mark)

#### A- Complete the following sentences.

(16 Mark, 1 each)

1. We do not live in this world alone. It is filled with end-less numbers of creatures; some are potentially hostile infectious agents. We have developed a series of ..... mechanisms that can establish a state of ..... against infection due to individual's ..... system, which combats infectious agents. Whose operation provides the basis for the delightful subject called .....
2. The immune system is divided into two functional divisions, namely the ..... and ..... immune systems consisting of a variety of ..... and ..... distributed throughout the body.
3. All the cells of immune system arise from pluripotent stem cells through two main lines of differentiation, ..... progenitor which produce ..... and ..... progenitor which produce ..... and other cells.
4. The average human adults have about ..... body cell; They have about ..... lymphoid cell and the lymphoid tissue as a whole represents about ..... of the total body weight, many mature lymphoid cells are long live and may persist as memory cells for .....
5. The cells of the immune system are organized into ..... & ..... to perform their ..... most effectively. These structures are collectively referred to as the ..... system.
6. Phagocytes have two main functions performed by two different cell types, the ..... macrophages whose predominant role is to ..... particulate antigens and ..... whose role is to ..... to specific antigen sensitive lymphocytes.
7. Lymphoid organs are classified into primary lymphoid organs include ..... and ..... whereas the secondary lymphoid organs include ..... and .....
8. The body's reaction to an injury is known as ....., whereas ..... is the process by which phagocytes are attracted to sites of inflammation. The serum concentration of C-reactive protein ..... rably during infections. It is bound to bacteria and promotes the ..... which facilitates their uptake by phagocytes.
9. Antibodies produced by B-lymphocytes; act as ..... between ..... and phagocytes. Whereas, interferon is produced by ..... cells and sometimes also by lymphocytes, it activates NK cells and induce a state of resistance to ..... in uninfected cells.
10. The intermolecular attractive forces binding antigen to antibody include ....., ..... and .....
11. The complement is defined as the ..... responsible for the biological activity of .....; its components are ..... membrane proteins and have no role in antigen presentation, although most play ..... in immune response.
12. The classical complement pathway can be divided into 3 stages; ....., ....., and .....
13. The immune response can take the form of ..... or may involve the production of ..... directed towards the antigen. B cells responding to ..... require T cell help to produce an optimum response, whereas ..... have the ability to deliver all necessary activating signals to the B cells.
14. In human MHC is found on chromosome 6 referred to as ..... MHC molecules recognize only ..... Class I MHC molecules present on the surface of ..... cells

except nervous tissue and platelets, whereas ..... are constitutively expressed only by certain cells involved in immune responses.

15. Examination of the responses following primary and secondary antigenic challenge shows that the secondary antibody response has the same 4 phases of primary antibody response but differs in ....., ....., ....., and .....
16. Macrophage releases a chemical ....., which causes the helper T- cell to release ..... It is concluded that cells involved in making the antibody response must recognize at least ..... of the antigen. B cells require ..... to be stimulated and differentiated into antibody forming cells.

**B- Choose the most suitable answers.**

**(9 Mark, 1 each)**

1. First antibody Ab to respond to infection, 5-13% Ab in circulation, structure pentamer (primarily involved in control of blood stream infections), found on the surface of B lymphocytes as a monomer, most efficient at eliciting "classical" complement cascade (highest affinity for complement), Effective in agglutination and precipitation reactions, only class produced immune responses to T-independent Ags,.....

A	Ig M	C	Ig E
B	Ig G	D	Ig D

2. Dominant Ab in circulation (80 - 85%), structure = monomer, only Ab that can cross the placenta (also protects baby after birth due to long half-life (~ 21 days), present in colostrum (first breast milk produced after birth), intestinal tract of babies can absorb. The antibody of memory!!!, Also induces "classical" complement activation .....

A	Ig E	C	Ig M
B	Ig A	D	Ig G

3. What happens to lymphocytes after they bind to their specific antigen?

A	They become skin cells	C	They disappear
B	They proliferate and mature	D	They stay the same

4. What type of cells do T and B lymphocytes become after they are activated?

A	Red blood cells	C	Effector and memory cells
B	Muscle cells	D	Skin cells

5. Which lymphoid structure in human filters lymph fluid and contains both T and B cells?

A	Bone marrow	C	Thymus
B	Peyer's patches	D	Lymph nodes

6. .... cells that found in mucous membrane and connective tissue they are important in wound healing.

A	T lymphocytes	C	NK cells
B	Mast cells	D	B lymphocytes

7. .... are leucocytes capable of recognizing cell surface changes on virally infected cells

A	T lymphocytes	C	NK cells
B	Mast cells	D	B lymphocytes

8. Some molecules of C3b bind to C4b2b to form ....., a C5 convertase that cleaves C5 into C5a and C5b.

A	C3bBb	C	C3aC3b
B	C4b2a	D	C4b2b3b

9. C3a and C5a functions include .....

A	smooth muscle contraction	C	mast cell degranulation
B	neutrophil activation and chemotaxis	D	all of the above

**Question Four:****(20 Marks)****A- What is the scientific term of each of the following: - (4 Mark, 1 each)**

1. \_\_\_\_\_: A generic term for molecules other than antibodies, produced by lymphocytes which are involved in signaling between cells of the immune system.
2. \_\_\_\_\_: A group of white blood cells which have the intrinsic ability to recognize and destroy some virally infected cells and some tumor cells.
3. \_\_\_\_\_: A diffuse system of phagocytic cells derived from the bone marrow stem cells, which are associated with the connective tissue framework of the liver, spleen, lymph nodes and serous cavities.
4. \_\_\_\_\_: A single antigenic determinant. Functionally it is the part of the antigen, which combines, with the paratope of the antibody.

**B- Define each of the following:****(4 Mark, 1 each)**

1. Affinity
2. Paratope.
3. Plasma cells.
4. Cytotoxic.

**C- Answer only (3) of the following questions.****(12 Mark, 4 each)**

1. Indicate the structure of a lymph node?
2. What are the functions of MHC antigens?
3. How the structure of antibody fits its functions?
4. Summarize the actions of complement and its role in the acute inflammatory reaction?

***"End Exam"******"With Best Wishes"****Prof. Dr. Ola Abu Samak**Prof. Dr. Lofty Habak**Prof. Dr. Basma Sheta****Head of Department Prof. Ayman M. Hyder***