

## final-Term Assignment (summer-20)

Course Title: Immunology and serology

Instructor: Saima hadi

Marks: 50

NAME:TARIQ KHAN I.D:14547

Attempt all questions .Each question carry 10 marks.

Q1. Define Autoimmune disorders with examples?

Q2. Draw Classic pathway of Complement system in detail?

Q3.Describe type I and type II Hypersensitivity?

Q4.What is Major histocompatibility complex ?

Q5. Explain Complement system , and its function ?

### **Q1. Define Autoimmune disorders with examples?**

**Ans.** An **autoimmune disorder** occurs when the body's **immune** system attacks and destroys healthy body tissue by mistake. There are more than 80 types of **autoimmune disorders**.

Some common **diseases** that are generally considered **autoimmune** include celiac **disease**, diabetes mellitus type 1, Graves' **disease**, inflammatory bowel **disease**, **multiple** sclerosis, psoriasis, rheumatoid arthritis, and systemic **lupus** erythematosus.

**Examples** of **autoimmune diseases** include systemic lupus erythematosus, Sjogren syndrome, Hashimoto thyroiditis, rheumatoid arthritis, juvenile (type 1) diabetes, polymyositis, scleroderma, Addison **disease**, vitiligo, pernicious anemia, glomerulonephritis, and pulmonary fibrosis.

### **Q2. Draw Classic pathway of Complement system in detail?**

Ans.

#### Complement Activation Classical Pathway Steps

The classical pathway is initiated by IgM or IgG antigen/antibody complexes binding to **C1q** (first protein of the cascade) leading to activation of C1r, which in turn cleaves C1s. There are **three pathways** of **complement** activation: the classical **pathway**, which is triggered directly by pathogen or indirectly by antibody binding to the pathogen surface; the MB-lectin **pathway**; and the alternative **pathway**, which also provides an amplification loop for the other two **pathways**. The **complement** system, also known as **complement** cascade, is a part of the immune system that enhances (**complements**) the ability of antibodies and phagocytic cells to clear microbes and damaged cells from an organism, promote inflammation, and attack the pathogen's cell membrane.

#### Q3.Describe type I and type II Hypersensitivity?

**Ans. Type I hypersensitivity** reactions involve lymphoid tissue associated with mucosal surfaces (skin, intestines, and lungs) and result from the interaction of antigen and immunoglobulin E in mast cells or basophils. Ferrets with mild reactions may exhibit pruritus and skin erythema.

**Type II hypersensitivity** is an antibody-dependent process in which specific antibodies bind to antigens, resulting in tissue damage or destruction.

#### Q4.What is Major histocompatibility complex ?

**Ans.** The **major histocompatibility complex (MHC)** is a coding region for surface proteins, such as HLA's essential for the acquired immune system to recognize foreign molecules in vertebrates, which in turn determines **histocompatibility**.

The **function** of **MHC** molecules is to bind peptide fragments derived from pathogens and display them on the cell surface for recognition by the appropriate T cells.

#### Q5. Explain Complement system , and its function ?

**Ans.** The complement system has four major function, including lysis of infectious organisms, activation of **inflammation**, opsonization and immune clearance. There are three different complement pathways, the classical complement pathway, the alternative complement pathway, and the mannose-binding lectin pathway.

**Complement** can be activated via three different pathways (Figure 1), which can each cause the **activation** of C3, cleaving it into a large fragment, C3b, that acts as an opsonin, and a small fragment C3a (anaphylatoxin) that promotes inflammation.

At the **basic** level the **broad functions of the complement system** can be split into **three** areas: (1) the activation of inflammation; (2) the opsonization (labeling) of pathogens and cells for clearance/destruction; (3) the direct killing of target cell /microbes by lysis.