Questions for current training discipline **Immunology**

(Department of Pathophysiology and Clinical Pathophysiology)

**Note: consult the theoretical course displayed on the department's website**

1st Topic: Functionality of MHC-I and MHC-II and their cellular support. Their role in the processing of intracellular and extracellular Ag.

1. General characteristic of Major histocompatibility complex I (MHC I)
2. General characteristic of Major Histocompatibility Complex II (MHC II)
3. Interaction of antigens with MCH I, MCH II.
4. Recognition mechanisms of antigen-presenting cells (APC). Cross-presentation
5. Cytolytic mechanisms of NK cells.
6. The role of MHC in the mechanisms of the rejection reaction of transplantation, graft.
7. Problem based learning. Clinical cases.

2nd Topic: T immune response (cellular) – stages, TL activation by APC, consequences of TL activation, TL differentiation, T effector mechanisms (Th, Tc).

1. T-lymphocytes and its precursors. Positive selection of T-lymphocytes
2. Helper T-lymphocyte populations (Th1, Th2) and their role in immune mechanisms.
3. The role of Th17, Th22, Th reg, Th in inflammation, autoimmune reaction.
4. General characteristic of cytotoxic T lymphocytes (T-CD8)
5. Effects of T-CD8 cytokines.

3rd Topic: Immune response B (humoral) – stages, activation of BL, humoral immune response to T-independent and T-dependent Ag, effector mechanisms.

1. B-lymphocytes and its precursors. Negative selection of B-lymphocytes
2. B-lymphocyte receptors
3. Stages of humoral immune response. The role of Th lymphocytes.
4. Primary humoral immune response
5. Secondary humoral immune response
6. The role of the Ag+Ab complex in humoral immunity.

4th Topic: Central and peripheral immune tolerance. Negative selection, apoptosis.

1. Notion of immune tolerance. Types. General characteristic
2. T-lymphocyte tolerance. Notion of immune anergy.
3. Immune tolerance in autoimmune processes.
4. The role of T-reg lymphocytes in the mechanisms of immune tolerance and autoimmunity.
5. Tolerance of B lymphocytes (central, peripheral)

5th Topic: Types of complement activation. Effects: C3b, C3a, C5a. MAC entity – membrane attack complex.

1. Definition of the complement system entity in the immune response. Three activation pathways: classic, alternative and lectin. The role of convertases.
2. The role of C3b in opsonization. Notion of double opsonization.
3. The role of anaphylatoxins (C3a and C5a) in the immune response. The essence of the complex C5b-C6-C7-C8-C9 (membrane attack complex).
4. Deficiency of the complement system, types and general consequences.
5. Complete dysfunction and type III hypersensitivity (systemic lupus erythematosus and rheumatoid arthritis).

**Attestation on all topics in SIMU**