A) THEORETICAL IMMUNOLOGY

1. What is immunology, immunity, relation to neuroendocrine system.
2. Structure of the lymphatic system - primary lymphatic organs.
7. Dendritic cells, nature and classification; their involvement in the induction of Th1 a Th2 immune response.
8. Macrophages - they role in the immune system.
10. Relationship between cell of the innate and antigen specific immunity.
11. Humoral factors of defense in systemic (circulatory), mucosal and skin immunity (specific and non specific).
12. Classical and lectin cascade of complement - biological sense, differences.
14. Antibodies - isotypes and subclasses, physiological concentrations, function in systemic and mucosal immunity.
15. Characteristics of antibody to antigen interaction, affinity, avidity, specificity.
16. The course of B cells activation, primary and secondary antibody response.
17. IgE – involvement in immune responses, interaction with cell surface receptors.
18. Genetic base of antibody variability, genetic recombination, sources of variability of V\text{H} a V\text{L}.
19. Antigens, haptens, carriers, allergens, autoantigen, superantigens.
20. Antigenicity, adjuvants, T dependent and independent antigens.
21. MHC, genomic localization, cellular distribution, hereditability, biological sense of MHC variability.
22. HLA-I a HLA-II - molecular structure, antigen MHC restriction and presentation.
23. Cytokines and chemokines - classification, biological sense.
27. Th cells - classification, functions, cooperation with other cell elements.
28. Regulatory CD4, CD8 T cells, the mechanisms of regulatory activity.
29. Cytotoxic T cell, effector and memory functions.
30. NK cells - effector functions cytotoxic and regulatory.
31. Antigen-specific and non-specific cooperation of T a B cells during development of antibody response.
32. B1 cells and γδ T cells.
B) LABORATORY INVESTIGATIONS IN CLINICAL IMMUNOLOGY

1. Investigation of the patient with suspected allergic/immunological disorder – anamnesis, physical and laboratory examinations.
2. Sampling of the patients for immunological laboratory investigation - indication, specimens collection, storage, results interpretation.
4. Laboratory tests for evaluation of humoral immunity - methods, reference values, indication, interpretation.
5. Laboratory tests for evaluation of lymphocyte populations counts and functions - methods, reference values, indication, interpretation.
6. Laboratory tests for evaluation of phagocytes - methods, reference values, indication, interpretation.
7. HLA–typing - methods, indication, interpretation.
10. Immunological laboratory testing in patients with suspect primary or secondary immunodeficiencies.
11. Immunological laboratory testing in patients with cancer.
12. Immunological laboratory testing in patients with suspect autoimmunity.
13. Immunological laboratory testing in patients with suspect allergy.
14. Immunological laboratory testing in patient before and after transplantation.
15. HLA- and other molecules-polymorphism testing in patients with cancer, autoimmunity, allergy, and immunodeficiency.
C) CLINICAL IMMUNOLOGY AND ALLERGOLOGY

1. Hypersensitivity reactions classification according to Coombs and Gell - principles, differences and clinical manifestation.
2. Immediate (type I) hypersensitivity reactions - principles, clinical manifestation. Atopy.
3. Cytotoxic (type II) hypersensitivity reactions - principles, clinical manifestation.
4. Immune complexes (type III) hypersensitivity reactions - principles, clinical manifestation.
5. Delayed hypersensitivity (type IV) reactions - principles, clinical manifestation.
6. Pathophysiological role of IgE in allergy and asthma.
7. Cell elements involved in allergic reaction, mediators of allergic reaction.
8. Seasonal allergic rhinitis (hay fever, polinosis) and persistent (perennial) allergic and non-allergic rhinitis - etiopathology, clinical manifestations, therapy.
10. Anaphylactic reaction, etiopathology, clinical manifestation, therapy.
12. Food allergy - symptoms, diagnosis, therapy.
13. Food intolerance (histamine, lactose), symptoms, diagnosis, therapy.
14. Hymenoptera venom allergy, symptoms, diagnosis, therapy
15. Immunodeficiencies - classification, differential diagnosis
16. Severe combined immune deficiency (SCID) - etiopathology, clinical manifestations, therapy.
17. Inherited immunodeficiency disorders - classification, etiopathology, clinical manifestation.
19. Symptomatic treatments and causative therapy of immunodeficiency disorders.
20. Immune stimulation therapy - clinical applications.
21. Immunosuppressive drugs - clinical applications.
22. Immune modulation therapy.
24. Biologic therapy for immunology.