

IMMUNOLOGY

Paper 13

THEORY

(48 Periods)

Unit 1: Overview of Immune System (9)

Historical perspective of Immunology, Early theories of Immunology, Haematopoiesis, Cells and organs of the Immune system

Unit 2: Innate and Adaptive Immunity (6)

Anatomical barriers, Inflammation, Cell and molecules involved in innate immunity, Adaptive immunity (Cell mediated and humoral), Passive: Artificial and natural Immunity, Active: Artificial and natural Immunity, Immune dysfunctions.

Unit 3: Antigens (5)

Antigenicity and immunogenicity, Immunogens, Adjuvants and haptens, Factors influencing immunogenicity, B and T-Cell epitopes

Unit 4: Immunoglobulins (11)

Structure and functions of different classes of immunoglobulins, Antigen-antibody interactions, Immunoassays, Polyclonal sera, Monoclonal antibodies, Hybridoma technology

Unit 5: Major Histocompatibility Complex (4)

Structure and functions of endogenous and exogenous pathway of antigen presentation

Unit 6: Cytokines (3)

Properties and functions, Cytokine-based therapies

Unit 7: Complement System (3)

Components and pathways of complement activation.

Unit 8: Hypersensitivity (3)

Gell and Coombs' classification and Brief description of various types of hypersensitivities

Unit 9: Vaccines (4)

Types of vaccines: Recombinant vaccines and DNA vaccines.

IMMUNOLOGY

Paper 13

PRACTICAL

1. Demonstration of lymphoid organs.
2. Ouchterlony's double immuno-diffusion method.
3. ABO blood group determination.
4. Preparation of single cell suspension of splenocytes, cell counting and viability test.
5. To assess the phagocytic activity of macrophages.
6. Principles, experimental set up and applications of immuno-electrophoresis, ELISA, RIA, FACS (Dry lab).

ESSENTIAL READINGS

- Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J (2006). *Immunology*, VI Edition. W.H. Freeman and Company.
- David, M., Jonathan, B., David, R. B. and Ivan R. (2006). *Immunology*, VII Edition, Mosby, Elsevier Publication.
- Abbas, K. Abul and Lechtman H. Andrew (2003.) *Cellular and Molecular Immunology*. V Edition. Saunders Publication.

SUGGESTED READING

- Lydyard, P., Whelan A. and Fanger M.W. (2004.) *Instant Notes in Immunology*, II Edition, BIOS Scientific Publishers