Exam.Code:0436
Sub. Code: 3473

1058

M.Sc. (Biotechnology) Second Semester
MBIO-202: Biology of Immune System

Time allowed: 3 Hours Max. Marks: 80

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.*

x-x-x

I. Answer the following:-

a) What is BCR? Explain its structure & functions.

b) Explain the causes and prevention of erythroblastosis fetalis.

c) What is acquired immunity? Explain its importance.

d) Successive waves of parasitemia after infection with trypanosoma results from antigenic shift in the variant surface glycoprotein, justify.

e) What are autografts, isografts, genografts and allografts?

f) How are superantigens different from conventional antigens?

g) What is immunological tolerance? Explain it by taking one example.

h) How does multiple sclerosis attack the central nervous system? (8x2)

UNIT – I

II. a) Explain structure and functions of thymus. Describe the structure and functions of different classes and subclasses of antibodies.

b) Various characteristics of the immunogens influence the immunogenicity, justify by taking suitable examples. (2x8)

III. a) Explain the organization, structure, and functions of spleen. Discuss the principle, methods and applications of various types of ELISA.

b) Discuss the role of hapten-carrier conjugates in immunology. Describe the principle, method and applications of flow cytometry. (2x8)

UNIT – II

IV. a) How are junctional flexibility, P-region nucleotide addition and somatic hypermutation responsible for generation of antibody diversity?

b) How do B-cell and T-cell get activated? Discuss the structure and functions of the cells of the immune system. (2x8)

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V. a) What is MHC restriction? Discuss three pathways of complement system. How are they regulated?

b) Explain the cytokines and their role in the regulation of immune system. Compare the processing and presentation of endogenous and exogenous antigens. (2x8)

UNIT – III

VI. a) How do T cell and NK cell mediate the lysis of target cells? Discuss the biochemical events responsible for mast-cell activation and degranulation.

b) Explain the antibody dependent cell mediated cytotoxicty and macrophage mediated cytotoxicity. Organ specific autoimrniine diseases like Graves' disease and Myasthenia gravis are mediated by stimulating/blocking auto-antibodies, justify. (2x8)

VII. a) Discus the development of localized Arthus reactions and delayed-type hypersensitivity reactions by taking suitable examples.

b) Explain the proposed mechanisms for induction of autoimmune responses. Discuss three methods of-treatments of autoimmune diseases. (2x8)

UNIT – IV

VIII. a) Discuss the genetic organization of HIV-1. How does HIV infect the humans? Explain the available therapies against HIV.

b) How will you produce the monoclonal antibodies by hybridoma technology? How do tumor cells evade the immune system of the host? (2x8)

IX. a) Which factors are responsible for low levels of immune responsiveness to *Plasmodium?* How do viruses make host immune response ineffective and able to survive and proliferate?

b) Explain the main barriers of transplantation immunology. Describe the specific immunosuppressive therapies. (2x8)

x-x-x