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B. Sc. (Biotechnology) Part - II Examination, 2018

BIOTECHNOLOGY

Paper : VIII

(Immunology)

Time : Three Hours] *[Maximum Marks : 75*

Note : Attempt *all* questions from *Section – A* (Objective type questions), *seven* questions from *Section – B* (Short answer type questions) and *two* questions from *Section – C* (Long/ Essay type questions).

SECTION – A

Choose the correct option

1. Antibody is produced by :

   (a) B cells (b) Plasma cells

   (c) NK cells (d) Macrophages

2. T cell mediated immunity is effective for :

   (a) intracellular infection (b) soluble antigens

   (c) helminthes (d) parasites

3. Which type of T cells assist in the function of B cells and other T cells ?

   (a) Sensitized (b) Helper

   (c) Cytotoxic (d) Natural Killer

4. Which is the most widely studied APC in human ?

   (a) Macrophage (b) Blood monocyte

   (c) B cell (d) IDCs

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5. At what age does the thymus reach its maximal size ?

(a) During the first year of life
(b) Teenage years (puberty)
(c) Between 40 and 50 years of age
(d) After 70 years of age

6. The secondary immune response :

(a) is mainly IgM antibody
(b) requires a low dose of immunogen for induction
(c) has low affinity antibody
(d) has a slow rate of antibody synthesis

7. Passive immunity is acquired through :

(a) natural infection
(b) natural maternal antibody
(c) purified microbial molecules
(d) vaccines

8. Which of the following is *not* a systemic autoimmune disease ?

(a) Insulin dependent diabetes mellitus
(b) Systemic lupus erythematosus
(c) Ankylosing spondylysis
(d) Rheumatoid arthritis

9. Primary cell responsible for tuberculosis immunity is :

(a) CD4+T cells
(b) NKT cells
(c) Macrophages
(d) γδT cells

10. Technique radioimmunoassay was first developed by :

(a) Marie Curie
(b) Hargobind Khurana
(c) Rosalyn Yalow
(d) Kary Mulis

SECTION – B

1. List the primary lymphoid organs and summarise their functions.

2. Write about ELISA technique and its use.

3. Define antigen. What is difference between antigens and haptens ?

4. Write about the structure of class I and class II MBC molecules.

5. Write short notes on the following :
   (i) Professional and Nonprofessional APCs.
   (ii) Clonal Selection Theory.

6. Write about the cells of cell mediated branch of the immune system.

7. Specific immunity exhibit *four* characteristic attributes. List and explain these attributes in brief.

8. Write about systemic autoimmune diseases.

9. What is active and passive immunization ?

10. Define monoclonal antibody. What is the significance of Bence Jone's protein ? Write about the clinical use of monoclonal antibody.

SECTION – C

1. Write in detail about antibody structure, types and their functions.

2. Describe antigen processing and presentation.

3. Describe various techniques for antigen-antibody interaction giving example.

4. Write in detail about the effector response of cell mediated immunity.

5. Write short notes on the following :

   (a) Affinity and avidity

   (b) Subunit vaccines

   (c) Precipitation and agglutination