



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

FIRST SEMESTER – NOVEMBER 2017

17PBT1MC04 - IMMUNOLOGY

Date: 10-11-2017
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

PART – A

Answer ALL the Questions

I. Choose the correct answer

(5 x 1 = 5 Marks)

- Activation of B cell receptor by the binding of an epitope result in the formation of
 - plasma cells and T cytotoxic cells
 - memory cells and T cytotoxic cells
 - Plasma cells for antibody production and memory cells for primary response
 - Plasma cells for antibody production and memory cells for secondary response
- MHC alleles are _____.
 - co-dominant
 - recessive
 - dominant
 - none of the above
- Type IV hypersensitivity is also referred to as _____ hypersensitivity.
 - IgM mediated
 - IgE mediated
 - IgG mediated
 - delayed type
- Natural humoral immune response against a pathogen leads to the production of
 - polyclonal antibodies
 - monoclonal antibodies
 - macrophages
 - CMI
- In Counter immunoelectrophoresis
 - electrophoresis will drive the antibody and antigen parallel to each other
 - electrophoresis will drive the antibody and antigen toward each other
 - the antibody will migrate towards anode
 - the antibody will migrate towards cathode

II. State whether the following are true or false.

(5x1=5 Marks)

- IgG can cross placenta and provide immunity to new born.
- Class III MHC molecules are structurally similar to Class I and II MHC molecules.
- Herceptin employs humanized monoclonal antibodies directed against the HER2 protein.
- Oral Polio Vaccine is safer than inactivated Polio Vaccine.
- Competitive immunoassay can be used to detect small amount of antigen and antibody.

III. Complete the following

(5 x 1= 5 Marks)

- Incomplete antigens are called _____.
- The Diversity Region is present only in _____ chain of an Immunoglobulin.
- _____ is a technique to match a patient and a donor for transplantation compatibility.
- The first vaccine was developed by _____.
- The chemical group on the antigen that can react with the antibody is _____

IV. Answer the following within 50 words

(5 x 1 = 5 Marks)

- What are anaphylotoxins?
- State the chromosomal location of genes coding for human immunoglobulins.
- Mention one difference between primary and secondary immunodeficiency disorders.
- What are toxoids?
- What are immunosensors?

PART B

Answer the following each within 500 words.

(5 x 8 = 40 marks)

Draw diagrams wherever necessary

21. (a) Classify antigens. Give an account of their properties.

OR

(b) Give a brief account of the the production and function of T lymphocytes

22. (a) Differentiate between class I and class II MHC molecules.

OR

(b) What are the types of organ donors? Add a note on criteria to be considered for transplantation.

23. (a) What are primary immunodeficiency disorders? Explain the **causes, symptoms and treatment** of **Adenosine deaminase deficiency**.

OR

(b) Comment on the symptoms, induction and treatment of Systemic Lupus Erythematosus.

24. (a) Discuss the function and applications of abzymes.

OR

(b) Explain the production of recombinant vaccines.

25. (a) Briefly explain the principle and applications of Western Blotting.

OR

(b) Discuss the methods available for mapping antibody epitopes on target antigens.

PART – C

Answer any TWO of the following, each within 1500 words.

(2 x 20 = 40 Marks)

Draw diagrams wherever necessary.

26. Write in detail on the complement system pathways.

27. Explain the mechanism of site specific recombination within the immunoglobulin gene with reference to the light chain. Add a note on its significance.

28. Briefly outline the different types of hypersensitivity reactions with examples.

29. Explain the principle, types, procedure and applications of ELISA.

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