



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY**

FIRST SEMESTER – NOVEMBER 2015

**BT 1828 - IMMUNOLOGY & IMMUNOTECHNOLOGY**

Date : 11/11/2015

Dept. No.

Max. : 100 Marks

Time : 01:00-04:00

**PART – A**

**(20 Marks)**

**Answer ALL the Questions**

**I. Choose the correct answer**

**(5 x 1 = 5)**

1. Pepsin hydrolysis of IgG molecule results in  
a) 1Fc & 2Fab      b) 1Fc & 1Fab      c) 1Fc & 1(Fab)<sub>2</sub>      d) 1(Fab)<sub>2</sub> & 1FAB
2. Which among the following is the polymorphic domain of MHC I & II respectively?  
a) 1, 3 & 1, 1      b) 1, 2 & 1, 1      c) 1, 2 & 1, 2      d) 1, 1 & 1, 2
3. Delayed type of hypersensitivity is \_\_\_\_\_ hypersensitivity  
a) Type1      b) Type2      c) Type3      d) Type 4
4. The most devastating Pandemic disease in human was caused by  
a) *Variola vera*      b) *Yersinia pestis*      c) H1N1      d) HIV
5. Individual cells can be sorted by  
a) Immunosensors      b) ELISPOT      c) Flow cytometry      d) Screening libraries

**II. State whether the following are true or false, if false, give reason**

**(5 x 1 = 5)**

6. Lectin mediated complement system initiates with antigen antibody binding.
7. Somatic hypermutation of variable region DNA, is to generate antibody diversity.
8. Failure in immune tolerance does not result in Auto immune disorders.
9. Individuals with immunodeficiency disorders should not be administered live vaccines.
10. Radiolabelled HB surface Antigens increase with the increase in Hepatitis B virus infected serum.

**III. Complete the following**

**(5 x 1 = 5)**

11. Exogenous Antigens presented on MHCII are recognized by ----- cells.
12. Phosphorylation of histone proteins in chromatin leads to-----.
13. The condition in which Thymus is not present in humans is -----.
14. Antibodies which are involved in reducing the activation energy of a reaction are called -----.
15. Presence of amplicon indicates the presence of antigen in-----.

**IV. Answer the following, each within 50 words**

**(5 x 1 = 5)**

16. What is the difference between affinity and avidity?
17. What is Antigenic drift?
18. What is HLA typing?
19. Write about the role of adjuvants.
20. What is immunochromatography ?

## PART B

Answer the following, each within 500 words.

(5 x 8 = 40 marks)

Draw diagrams wherever necessary

21. (a) Write a note on types of cytokines, role of cytokines and cytokine mediated signaling

OR

b) Illustrate and write about B cell maturation, activation and clonal selection theory

22. (a) Write a short note on miRNA biogenesis and their role in immune regulation

OR

(b) Describe in brief regarding the immunity against viral infections

23. (a) Briefly explain the various types of transplantation and mechanism involved in graft rejection.

OR

(b) Write about the mechanisms involved in immunological tolerance

24. (a) Explain HAT selection of hybridomas and discuss their applications

OR

(b) What are the various routes a vaccine can be administered? Give examples of each type.

25. (a) Describe briefly SEREX with illustration.

OR

(b) What is cDNA microarray? How is it useful in analyzing the expression of immunoglobulin genes?

## PART – C

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

(2 x 20 = 40 Marks)

Draw diagrams wherever necessary.

26. Give a detailed account on MHC types, structure, function and processing and presentation of endogenous antigen.

27. Write in detail about germline gene organization and mechanism of gene rearrangement in light and heavy chains.

28. Write in detail about autoimmunity, induction of autoimmunity and systemic and organ specific autoimmune disorders.

29. Explain about various types of vaccines and their application in cancer and AIDS.

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