

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086**  
**(For candidates admitted during the academic year 2015 – 2016)**

**SUBJECT CODE: 15BY/PC/IM34**

**M. Sc. DEGREE EXAMINATION - NOVEMBER 2016**  
**BIOTECHNOLOGY**  
**THIRD SEMESTER**

**COURSE : CORE**  
**PAPER : IMMUNOLOGY**  
**TIME : 3 HOURS**

**MAX. MARKS: 100**

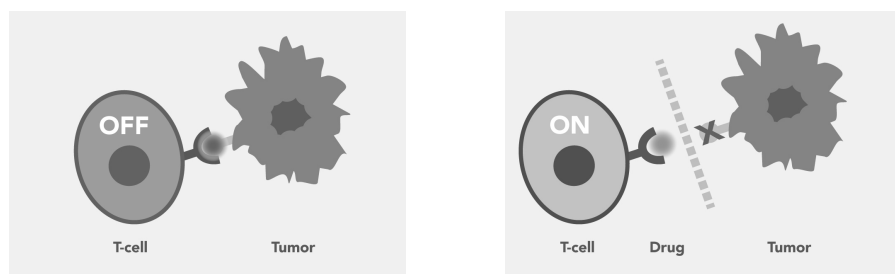
**SECTION – A**

**ANSWER ALL QUESTIONS:**

**(20 x 1 = 20)**

1. Comment on the type of immunity conferred in the treatment for small pox used by Jenner.
2. Define Peyer's patches.
3. What is a hapten?
4. Name the type of antibody-antigen reaction that forms the basis of the Mancini Radial Immunodiffusion.
5. State the function of Properdin in the Alternative Pathway.
6. Expand MAC and name the proteins that form it.
7. Comment on positive selection of T-cells.
8. Where do B-cells originate and where do they mature?
9. Differentiate autocrine and paracrine action of cytokines.
10. List the 5 families of cytokines.
11. Define extravasion.
12. What type of hypersensitivity reaction causes erythroblastosis fetalis?
13. Briefly comment on Hashimoto's thyroiditis.
14. Name the autoimmune disorder in which the characteristic "butterfly rash" is a symptom.
15. What is the likely primary immunodeficiency (gene associated to chromosome 4) of a patient with recurrent infection, eosinophila and elevated levels of IgE?
16. Give 2 examples of animal models used to study immunodeficiencies.
17. Define an isograft.
18. State the reason of performing a mixed-lymphocyte reaction.
19. List the stages of cell-mediated graft rejection.

20. Identify the type of therapy represented below.



### SECTION – B

ANSWER ANY FOUR QUESTIONS.

(4 x 10 = 40)

21. Draw and describe any two granulocytes and two agranulocytes. Add a note on their immunological function.
22. Classify the different types of immunoglobulins and comment on the biological significance of each class.
23. Schematically represent the classical pathway of the complement system and comment on the function of the key proteins involved.
24. Describe the typical pathways of antigen processing and presentation.
25. Define Cytokines. Comment on the properties of cytokines and their importance in the immune system.
26. *AIDS greatly lowers resistance to infection and malignancy.* – Justify
27. Explain the stages of hyperacute rejection of a kidney graft.

### SECTION – C

ANSWER ANY TWO QUESTIONS.

( 2x20 = 40)

28. Discuss the significance of the Major Histocompatibility Complex. Highlight function, classes, structure, genes and proteins.
29. Explain the different types of hypersensitivity reactions with examples.
30. Outline how a patient's immune system would respond to Dengue.
31. Define Genetic Vaccines. Discuss the construction, administration, mechanism and the potential benefits and drawbacks of DNA vaccines.

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