

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIO TECHNOLOGY

FIRST SEMESTER – NOVEMBER 2009

BT 1822 - IMMUNOLOGY & IMMUNOTECHNOLOGY

Date & Time: 11/11/2009 / 1:00 - 4:00 Dept. No.

Max. : 100 Marks

PART A

(20 marks)

Answer all the questions

I. Choose the best answer

(5×1=5marks)

1. Lipid antigens are presented to T cells by
(a) MHC I (b) MHC II (c) CD1 (d) CD 28
2. Which one of the following have antiviral activity?
(a) Interferons (b) Interleukins (c) Cytokines (d) Chemokines
3. Tissue typing can be done using:
(a) Immunodiffusion (b) Mixed lymphocyte reaction
(c) Agglutination (d) Elispot assay
4. The chemical used for hybridoma production is:
(a) Polyethylene glycol (b) Polyester (c) Ethyl bromide (d) Triethanolamine
5. Humanized monoclonal antibodies have human:
(a) Variable region (b) Constant region
(c) Hypervariable region (d) Gamma region

II State whether the following statements are true or false, if false give reasons

(5×1=5marks)

6. Monocytes differentiate in tissues to become mast cells.
7. Adverse blood transfusion reaction are classified as Type _____ hypersensitivity.
8. The organ donor has to be fully HLA-compatible for successful transplantation.
9. Hybridoma cells cannot grow in the absence of thymidine in the medium.
10. TMB/H₂O₂ can be used as a substrate in ELISA.

III. Complete the following

(5×1=5marks)

11. _____ is added in the HAT medium to block dihydrofolate reductase.
12. Immunoproteasomes generate peptides that can bind with MHC class _____ molecules.
13. _____ graft rejection occurs months or years after transplantation.
14. _____ bind to antibodies but do not induce an immune response.
15. _____ technique is used for separating different cell populations.

IV Answer the following in 50 words each (5×1=5marks)

16. Explain the difference between the terms antigen presenting cell and target cell used in immunology.
17. What are passenger leucocytes?
18. Distinguish between affinity and avidity of an antibody.
19. Expand ELISA. Why is it termed so?
20. What is the difference between polyclonal and monoclonal antibody preparations?

PART B (5×8=40marks)

Answer any five of the following, each in about 350 words

21. Differentiate between:
 - (i) Isotypes and idiotypes
 - (ii) Antigens and immunogens
 - (iii) IgE and IgA
 - (iv) CD 4 and CD 8 cells
22. Give an account of the structure and function of mucosal-associated lymphoid tissues.
23. Write a note on the different types of tumour antigens and cancer immunotherapy.
24. Discuss: (i) Immunoscreening of recombinant libraries (ii) Indirect ELISA
25. Explain the production of subunit and idiootype-based vaccines. Add a note on vaccine delivery methods
26. Write notes on:
 - (i) Epitope mapping
 - (ii) Immunochromatography
27. Give the immunological aspects of the following:
 - (i) Complement proteins
 - (ii) Vaccines
 - (iii) Bone marrow
 - (iv) Hyperacute graft rejection
28. Explain the different types of autoimmune disorders with suitable examples

PART C (2×20=40marks)

Answer any two of the following, each in about 1500 words

- 29 (A) Give an account of the production, purification and applications of monoclonal antibodies.

OR

(B) Write notes on

- (i) Immunosuppressive therapy for transplantation (8)
- (ii) Viral evasion of host defense mechanisms (6)
- (iii) Tumour suppressor genes (6)

- 30 (A) Discuss the following:

- (i) Haematopoiesis
- (ii) Competitive ELISA
- (iii) Nature of antigens
- (iv) Validation of immunoassays

OR

(B) Describe the following:

- (i) Cytosolic pathway of antigen processing and presentation. (14)
- (ii) Structure of MHC molecules and their gene organization (6)
