

Total Printed Pages : 4

Roll No. ....

P-239

B. Sc. (Biotechnology) Part – II Examination, 2014

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

[ Marks : 25

Select the right choice :

1. Which of the following is not a direct part of innate immunity ?
  - (a) Macrophage
  - (b) Lysozyme
  - (c) Antibodies
  - (d) Neutrophils
2. Cowpox infection provides protection against smallpox because of :
  - (a) passive protection
  - (b) innate immunity
  - (c) cross reactivity of causative agents
  - (d) similar appearance of disease

P. T. O.

3. Attenuated vaccines were introduced by :

- (a) Jenner
- (b) Pasteur
- (c) Metchnikoff
- (d) Ehrlich

4. The TCR is composed of two polypeptide chains and is designed to recognize :

- (a) a foreign antigenic determinant alone
- (b) epitope plus an MHC molecule
- (c) Only an MHC molecule
- (d) polysaccharide antigen

5. Which of the following is an example of active immunization :

- (a) Immunization with cowpox virus vaccine
- (b) Immunization with antitetanus antibodies
- (c) transfer of antibody through mother's milk
- (d) transfer of antibody across placenta from mother to fetus

6. B cells do not express :

- (a) C3 receptor
- (b) Class II MHC molecule
- (c) Class I MHC molecule
- (d) CD4 molecule

7. Cytotoxic T cells are identified by antibodies against :

- (a) CD 8
- (b) CD 4
- (c) CD 3
- (d) Class I MHC molecules

8. If all the immune cells of an animal are destroyed, which of the following cells may reconstitute the entire immune system :

(a) Thymocytes

(b) Bone marrow stem cells

(c) Lymph node cells

(d) T lymphocytes

9. In which of the following organs does antigen-independent maturation of different lymphocytes takes place :

(a) thymus

(b) lymph nodes

(c) bone marrow

(d) thymus & lymph nodes

10. Clonal selection theory was proposed by :

(a) Niels Jerne and F. Macfarlane Burnet

(b) Jenner and Robert Koch

(c) Paul Ehrlich and Klaus D. Elgert

(d) Louis Pasteur and Metchni Koff

### SECTION - B

[ Marks : 25

1. Name the secondary lymphoid organs and state in brief what happens in them to mount immune response.

2. What do you understand by yellow bone marrow ?

3. Indicate the functions of mast cells in anaphylaxis.

4. Write down the role of macrophages in DTH reaction.

5. Distinguish between a B cell receptor and T cell receptor complex.

(3)

P.T.O.

P-239

6. State in brief clonal selection theory.
7. Distinguish between TH1 and TH2 subsets of TH cells.
8. Differentiate the terms cytokine, monokine and lymphokine.
9. Distinguish between primary and secondary antibody response.
10. Explain the methodology of hybridoma technology and its application in modern biotechnology.

**SECTION - C**

1. What do you understand by classical precipitin reaction? Discuss the forces involved in antigen-antibody interaction.
2. Elaborately describe principle types and applications of ELISA.
3. What is humoral immunity. Describe various types of immunoglobulins and discuss the mechanism of antibody diversity.
4. Mention the physical barriers and conditions that prevent the entry of pathogens into a human host.
5. What do you understand by MHC restriction in antigen presentation? Differentiate between antigen and immunogen.