Mark Scored :

KATHMANDU UNIVERSITY
End Semester Examination
August/September 2017

Level : B. Sc.
Year : II
Course : HBIO 212
Semester : II
Exam. Roll No. :
Time: 30 mins.
F. M. : 20
Registration No.:
Date : SEP 04 2017

SECTION "A"
[20 Q. × 1 = 20 marks]

Multiple choice questions.

1. Which of the following immune cells/ molecules are most effective at destroying intracellular pathogens?
   a. T helper cells b. Antibodies c. Complement d. T cytolytic cells

2. Cell mediated immunity is carried out by_____ while humoral immunity is mainly carried by_____
   a. B cells /T cells b. Epitopes /Antigen c. T cells / B cells d. Antibody / Antigen

3. B cell mature in the_____while T cells mature in the_____
   a. Thymus / Gut associated lymphoid tissue(GALT)
   b. Spleen / GALT
   c. Bone marrow / Thymus
   d. Liver / Kidneys

4. Which of the following substances willnot stimulate an immune response unless they are bound to larger molecules?
   a. Antigen b. Virus c. Hapten d. Antibody

5. You are 90 times as likely to get the Rheumatic disease Ankylosing spondylitis if you are
   a. HLA A3 b. HLA DR3 c. HLA A1 d. HLA B27

6. Which is the first immunoglobulin class to be produced in a primary response to an antigen and also the first immunoglobulin to be synthesized by the neonates?
   a. IgA b. IgM c. IgE d. IgD

7. Which of the following is a central molecule in complement pathway?
   a. C1 b. C2 c. C3b d. C5

8. Classical pathway of complement system is activated by:
   a. Antigen- antibody complexes b. Antigens
   c. Antigen bound to MHC d. Microorganism and its toxins

9. The technology used for the production of monoclonal antibodies is
   a. Massculture technology b. Hybridoma technology
   c. Suspension culture d. Pure culture

10. Innate immunity involves all **except**
    a. Anatomical barriers b. Phagocytic
    c. inflammatory mechanisms d. Antibody production

11. Which of the following is used for typing when a patient is being prepared for an organ transplant?
    a. MHC class I molecules
    b. MHC class III molecules
    c. MHC class II molecules
    d.MHC class IV molecules

12. MHC antigens are found on all human cells with exception of what type of cells?
    a. Hepatocytes b. RBC c. Neurons d.WBC

13. Autoimmunity can be caused due to all of the following except?
    a. The presence of forbidden clones
    b. Expression of cryptic antigens
    c. Negative selection of T-cells in the thymus
    d. Inappropriate expression of the MHC proteins

14. The phenomenon of selective proliferation of B cells in response to their interaction with the antigen is called
    a. Clonal expansion
    b. Clonal proliferation
    c. Monoclonal selection
    d. Clonal selection

15. The first vaccine was developed by
    a. Louis Pasteur b. Carl Landsteiner c. Edward Jenner d.Joseph Miester

16. Type IV hypersensitivity is also called as
    a. Immediate hypersensitivity
    b. Delayed hypersensitivity
    c. Cytotoxic Immediate hypersensitivity
    d. Immune complex Immediate hypersensitivity

17. Humoral immunity is a type of adaptive immunity that results in the circulation of which of the following throughout the blood?
    a. Antigens b. Antibodies c. Natural killer cells d. Macrophages

18. Which portion of an antibody provides antigen binding sites?
    a. Heavy chain b. Light chain c. constant portion d. variable portion

19. Which of the following is not one of the three main antigen-presenting cell types?
    a. Natural killer cells
    b. B lymphocytes
    c. Dendritic cells
    d. Macrophages

20. Major histocompatibility complex (MHC) refers to a large group of genes that code for proteins that play an essential role in which of the following?
    a. phagocytosis by neutrophils
    b. Antigen presentation to T lymphocytes
    c. Antigen presentation to B lymphocytes
    d. Phagocytosis by Macrophages

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SECTION "B"

Attempt ALL questions. Figures to the right indicate full marks. Make suitable and well labeled diagram where necessary.

1. What is monoclonal antibody (Mabs)? Describe the technology for its production and enlist various application of Mabs. [1+4+2=7]

OR

Explain classical pathway of complement activation with a neat diagram. Write the biological significance of complement. [5+2=7]

2. Explain different nonspecific defense mechanisms as a part of innate immunity. [5]

3. Explain hypersensitivity mediated by IgE molecules. [5]

4. Write short notes on: *(ANY TWO)* [5 × 2 = 10]
   a. Principles and application of radioimmunoassay(RIA)
   b. Clonal selection theory
   c. Opsonization

5. Describe the different types of vaccines. Add note on role of vaccines in modern medicine. [4+3=7]

OR

Explain the structure and different classes of immunoglobulins with their biological activities. [3+3+1=7]

6. How do T-cells recognize self cells (the cells that make up your body) from foreign cells? Write any four differences between MHC class I molecules and MHC class II molecules. [2+4=6]

7. Define and explain the pathogenesis of autoimmunity. Give reason why are women more susceptible than male in autoimmunity. [1+3+2=6]

OR

Write the differences between: [3+3=6]
   a. Humoral mediated Immunity and Cell mediated Immunity
   b. T cell dependent(TD) antigen and T cell independent(TI) antigen

8. Write the general features of antigen –antibody reactions. Add note on direct and indiret coombs test with their applications on medicine. [2+4=6]

9. Define the following terms: (*ANY THREE*) [3 × 1=3]
   a. Epitope
   b. Immunity
   c. Precipitation reaction
   d. Allograft