

**B.Sc. MICROBIOLOGY
FIFTH SEMESTER
IMMUNOLOGY
BMB-502**
[USE OMR SHEET FOR OBJECTIVE PART]

**SET
A**

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

(Objective)

Choose the correct answer from the following:

1 × 20 = 20

- The step that produces memory cells and effector cells:
 - Activation
 - Proliferation
 - Differentiation
 - Interaction
- Heightened secondary immune response is due to the activity of:
 - Naïve T cells
 - Naïve B cells
 - Lysozyme
 - Memory cells
- Differentiating between different antigens follows which attribute of adaptive immunity?
 - Specificity
 - Diversity
 - Memory
 - All of the above except a
- Autoimmune disease is due to the abnormality in:
 - Low expression of CR
 - Non specificity of lymphocytes
 - Inappropriate response of immune cells
 - Both a and c
- Follicular Dendritic cells express:
 - Class I MHC
 - Class II MHC
 - CD28
 - None of the above
- Thymocytes are found in (thymus):
 - Nurse cells
 - Cortex
 - Medulla of Thymus
 - Both a and b
- Which is the ODD one out?
 - CR 1 and CR 2
 - CD4+
 - Class II MHC
 - B 220
- Positive selection in bone marrow is to remove:
 - B cells acting against grafts
 - B cells acting against BSA
 - B cells acting against self-components
 - B cells against RBC from another individual
- CD 16 is used for the response called:
 - ADCC
 - Opsonization
 - Phagocytosis
 - All of the above
- Which of the following statement is true?
 - Haptens are immunogenic
 - Haptens are large proteins
 - Haptens-carrier conjugate is immunogenic
 - Hapten-lipid conjugate is immunogenic

11. Which antibody has an extra domain and why?
 - a. Question is wrong
 - b. IgE because of extra amino acids
 - c. IgM because of an extra β sheets
 - d. IgM because of intrachain disulphide bond
12. Secretory component in IgA is derived from a pathway called:
 - a. Opsonization
 - b. Receptor mediated endocytosis
 - c. ADCC
 - d. Phagocytosis
13. Which of the following explains antibody structure?
 - a. Hydrophobic side chains inside and hydrophilic side chains outside the antibody structure
 - b. Variable domain of 110 amino acids due to intrachain disulphide bond
 - c. H-L chains are stabilized by interchain disulphide linkage
 - d. All are true
14. Properdin increases the half-life of:
 - a. C5b6
 - b. C4b2b
 - c. C3bBb
 - d. C3bBb3b
15. Formation of thick protein coat around the virus inhibits:
 - a. C4b2a3b binding
 - b. Host cellular binding
 - c. Recognition by C3b
 - d. All of the above
16. Which of the following determine the binding of a peptide to MHC complex?
 - a. Peptide binding cleft of MHC
 - b. The presence of CLIP
 - c. Size of the antigenic peptides
 - d. All of the above
17. Labelled antigens in RIA is:
 - a. Has the same epitope as unlabelled antigen
 - b. Has the same affinity for the antibody
 - c. Is used to detect radioactivity
 - d. All of the above
18. What is the outcome of infiltration of inflammatory cells during graft transplantation?
 - a. Killing of histoincompatible cells
 - b. Necrosis occurring within 10th day
 - c. No vascularization
 - d. All of the above
19. Formation of precipitin line explains:
 - a. Specificity of antibody towards the antigen
 - b. Equal concentrations of both antigen and antibody
 - c. A zone called equivalence zone
 - d. All of the above
20. What is the difference between vaccine *Streptococcus pneumoniae* and *Hemophilus influenzae*?
 - a. In the methods of activating both the branches of immunity
 - b. Both are recombinant vaccines
 - c. They cause disease
 - d. Both use tetanus toxoid

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(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50.

[Answer question no.1 & any four (4) from the rest]

1. What was the mechanism of immunization before vaccines were discovered? Explain in your own words. Explain how chemical mediators orchestrate inflammatory responses? Why sometime our skin cannot give protection and during what type of infection? What is the importance of specificity in vaccination? Give reason for your answer. Expand phagocytosis with a suitable diagram. 2+3+2+2+1=10
2. Explain the structure of thymus with a neat diagram. What is the importance of positive selection in thymus? Justify your answer. What is the mechanism of neutralization of infection in spleen? Explain the process and give the importance of germinal center in the process. Where do you find interdigitating dendritic cells and what is the importance? Explain in your own words how they will encounter lymphocytes and in which organ of the body. How can you differentiate between a resting and an active macrophage? Write it in your own words. 3+3+2+2=10
3. Explain the structure of antibodies with help of IgE. What were the line of tests that lead to the discovery of arms of antibody? In what instance do you think antibodies will be transferred and confer immunity? Justify your answer. What is the importance of CD28 receptor on B cell membrane? Will there be any effect if there is an abnormality in the expression of CD28? Explain in your own words. 2+3+2+1+2=10
4. Explain in your own words the effects of adjuvants when they are injected along with antigen. What is the use of monoclonal antibodies in testing athletes against illegal drugs? Explain in your words how they are produced. Differentiate between antigenicity and immunogenicity in context to haptens. What was the use of homogenous antibodies in antibody sequencing? In what way B and T cells interacts with a foreign antigen. Explain in your own words. 2+1+1+2+2+2=10
5. Explain the structure of MHC I molecules with a neat diagram. What are the chances of transplantation between an inbred and an outbred population? Explain your answer in relation to polymorphism of MHC genes. Is alone affinity defines the strength between antigen and antibody? Justify your answer. What are the similarities and difference between precipitation reaction done in fluids and in gel? Explain the principle of immunoelectrophoresis. Interpret the precipitation curve with a diagram. 3+2+1+2+2=10

6. Explain the classical method of complement activation. What is the relation between immune clearance and type III hypersensitivity? Explain in your own words. Write about the tests that will confirm histocompatibility or histoincompability between tissues of the donor and the recipient. What are the therapies you will suggest to recipient of a transplant? 3+2+3+2=10
7. What is the difference between attenuated and inactivated vaccine? Explain with the help of polio vaccine. Between attenuated and inactivated vaccine, which one has more advantage for constructing a recombinant vaccine? Give reasons. Why polysaccharide vaccine can activate only B cells? How to improve them to activate T cells? Justify your answer. How will you interpret the results of indirect and competitive ELISA? A patient was infected with Streptococcus. How will you determine the amount of the bacteria in solution? Explain the process. 2+2+2+2+2=10
8. What is the outcome of a mother who is Rh positive and the fetus is Rh negative? In your own words explain with reasons how to prevent such complications. Write a note on Hashimoto's thyroiditis. How can you treat a patient with early and late responses afflicted with asthma? Explain why an individual with myasthenia gravis suffers from paralysis. Do you think binding of allergen leads to degranulation? Justify your answer. 3+2+2+2+1=10

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