

**M.Sc. MICROBIOLOGY
THIRD SEMESTER
IMMUNOLOGY
MMB-301**

**SET
A**

[USE OMR FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 min.

(Objective)

Marks: 20

1X20=20

Choose the correct answer from the following:

1. Who is known as the father of immunology?
 - a. Edward Jenner
 - b. Antoni van Leeuwenhoek
 - c. Louis Pasteur
 - d. Robert Koch
2. Following is not a chemical mediator
 - a. complement
 - b. cytokines
 - c. TLRs
 - d. macrophages
3. Which is NOT true about adaptive immune response
 - a. Antigen specific
 - b. Absence of diversity
 - c. Presence of memory
 - d. Slow response
4. Which of the following does not fall under Lymphoid progenitor cells
 - a. NK cells
 - b. T-cells
 - c. Macrophages
 - d. B-cells
5. Which of the following is a primary lymphoid organ
 - a. Spleen
 - b. Bone marrow
 - c. lymph nodes
 - d. MALT
6. B2-microglobulin structure is present in
 - a. MHC class I
 - b. MHC class II
 - c. Cytokines
 - d. None of the above
7. Following is one of the genes of MHC class II molecule
 - a. HLA-A
 - b. HLA-B
 - c. HLA-DQ
 - d. HLA-C
8. The overall binding between antibodies and a multivalent antigen is known as
 - a. Affinity
 - b. Avidity
 - c. Cross-reactivity
 - d. Epitope
9. Cytokines released by activated T lymphocytes are called
 - a. Lymphokines
 - b. Monokines
 - c. Interleukins
 - d. None of the above
10. The principle of RIA depends on
 - a. Competitive binding
 - b. Antigen-antibody interaction

- c. Enzyme-substrate complex d. None of these
11. The following damage cells by releasing lytic enzymes
 a. Macrophages b. Neutrophils
 c. Mast cells d. Only (a) and (b)
12. Follicular Dendritic cells that do not express
 a. Receptors for Ab b. Class II MHC
 c. CD28 d. All of the above
13. Secondary follicles are NOT found in the following
 a. Tonsils b. Payer's patch
 c. Medulla of Thymus d. Marginal zone
14. Secretory component in IgA is derived from a pathway called
 a. Opsonization b. Receptor mediated endocytosis
 c. ADCC d. Phagocytosis
15. How C5a of complement activation is involved in type opsonization?
 a. Upregulation of CR b. Increase in the generation of C3b
 c. Downregulation of CR d. Increase production of Abs
16. Properdin increases the half-life of
 a. C5b6 b. C4b2b
 c. C3bBb d. C3bBb3b
17. The components not working during classical pathway of complement activation includes
 a. MBL b. C1
 c. C2 d. None of the above
18. Secretory components present in the structure of IgA was acquired during
 a. Maturation b. Production
 c. Transport d. All of the above
19. Formation of protein coat around the virus will prevent
 a. Formation of viral particles b. Synthesis of viral proteins
 c. Inserting viral genome d. None of the above
20. How many amino acids are present in each domain of antibodies?
 a. 60 b. 80
 c. 110 d. 120

(Descriptive)

Time : 2 hrs. 40 min.

Marks : 50

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

1. State the difference between innate and acquired immune response. With the help of a diagram show how innate and acquired immunity are interdependent. 5 + 5 = 10
2. Explain briefly on the history of immunology stating the contributions of the major scientists towards the field. 10
3. What is ELISA? Explain the categories in detail with diagram. 3 + 7 = 10
4. Write short note on the following
a) RIA 5 + 5 = 10
b) Single Radial Immuno-diffusion
5. Explain the structure of lymph nodes with a neat diagram. An injection containing pathogen was given to an individual into his blood. Explain the immune response and which organ of the body is involved? Explain opsonization in context to macrophage. 4+4+2=10
6. What is autoimmune disease? Mention the types. Explain Hashimoto's thyroiditis and IDDM. 1+1+4+4=10
7. What is the importance of the classical pathway of complement activation? Explain the mechanism. Justify your answer. Explain is the use of C5 convertase in eliminating bacterial cells. Explain the mechanism. What is the importance of immune clearance? Justify your answer with an example. 3+4+3=10
8. Explain the formation of MAC. What is the significance of the mechanism? What is the importance of immune clearance? Explain in your own words. Explain how C3b promotes opsonization. 4+1+3+2=10

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