THIRUVALLUVAR UNIVERSITY
PERIYAR ARTS COLLEGE- CUDDALORE
P.G. and Research DEPARTMENT OF ZOOLOGY
M. Sc. Zoology - III Semester
MZO 33 – IMMUNOLOGY

Answer ALL the Questions

1. A "nonself" substance that can provoke an immune response is called a(n) _____.
   a) antigen
   b)Immunoglobulin
   c) interferon
   d) antibody

2. The intermolecular forces which contribute to the interaction between antibody and antigen:

   a) Are all electrostatic
   b) Are all van der Waals.
   c) Are all hydrophobic.
   d) Rely on a combination of the above.

3. Which of the following statements is incorrect? Affinity is:
   a) A measure of the strength of the binding of antigen to antibody.
   b) The association constant of the Ag/Ab equilibrium
   c) Avidity.
   d) Related to the free energy change of the Ag/Ab interaction

4. Active artificially acquired immunity is a result of _____.

   a) antibodies passed on from mother to baby through breast milk
   b) injection of an immune serum
   c) antibodies passed on from mother to fetus through the placenta
   d) Vaccination
5. Lymphocytes that develop immunocompetence in the thymus are _____.
   a) T Lymphocytes
   b) B Lymphocytes
   c) NK cells
   d) Null cells
6. Which cell does NOT have a direct role in phagocytosis?
   a) Macrophage

b) NK cells
c) Eosinophil
d) Neutrophil

7. This immune cell is able to respond quickly after any subsequent encounter with the same antigen.
a) Plasma cell
b)Memory cell
c) NK cell
d) Nerve cell

8. Lymphocytes are
a) Mononucleate
b) Binucleate
c) Polynucleate
d) Anucleate

9. Stem cells are
a) Undifferentiated cells
b) Differentiated nerve cells
c) Differentiated bone cells
d) Muscle cells

10.T-lymphocytes matured at
a) Bursa of fabricus
b) Spleen
c) Kidney
d) Thymus

11. Which of the following cell types is not considered a professional antigen-presenting cell?
a. macrophage
b. B cell
c. dendritic cell
d. all of the above are professional antigen-presenting cell

12. B-Lymphocytes matured at
a. Bone marrow
b. Thymus
c. Lymph node
d. None of the above

13. Null cells are
a. B-cell
b. T-cell
c. neither B-cell nor T-cell
d. None of the above

14. Which one of the following is involved in the processing of antigen
a. NK cell
b. Null cell
c. Macrophages
d. None of the above

15. The primary function of Macrophage is
    a. Phagocytosis
    b. Exocytosis
    c. Endocytosis
    d. None of the above
16. Which one of the following is the primary lymphoid organ
    a. MALT
    b. GALT
    c. Thymus
    d. Spleen
17. Lymph node is a
    a. Primary lymphoid organ
    b. Secondary lymphoid organ
    c. Both A and B
    d. None of the above
18. Which one of the following is both primary and secondary lymphoid organ
    a. Spleen
    b. Bone marrow
    c. Lymph node
    d. Thymus
19. MALT stands for
    a. Mucus associated lymphoid tissue
    b. Muscle associated lymphoid tissue
    c. Membrane associated lymphoid tissue
    d. None of the above
20. Dendritic cells are otherwise called as
    a. Kupffer cells
    b. Dust cells
    c. Langerhans cells
    d. Gaint cells
21. The T-lymphocytes and B-lymphocytes are the major cells of the
    a. Lymph node
    b. Lymphatic vessels
    c. Adrenal gland
    d. Thymus
22. Which of the following characteristics is common to both T-cell receptors and immunoglobulins?
    a. Somatic recombination of V, D and J segments is responsible for the diversity of antigenbinding sites.
    b. Somatic hypermutation changes the affinity of antigen-binding sites and contributes to further diversification.
    c. Class switching enables a change in effector function.
    d. The antigen receptor is composed of two identical heavy chains and two identical light chains.
23. MHC class II molecules are made up of two chains called _____, whose function is to bind peptides and present them to _____ T cells:

a. alpha (α) and beta (β); CD4
b. alpha (α) and beta2-microglobulin (β2m); CD4
c. alpha (α) and beta (β); CD8
d. alpha (α) and beta2-microglobulin (β2m); CD8

24. MHC molecules have promiscuous binding specificity. This means that
a. a particular MHC molecule has the potential to bind to different peptides
b. when MHC molecules bind to peptides, they are degraded
c. peptides bind with low affinity to MHC molecules
d. none of the above describes promiscuous binding specificity.

25. Which of the following cell types is not considered a professional antigen-presenting cell?
a. macrophage
b. neutrophil
c. B cell
d. dendritic cell

26. Immunoglobulins are
a) Lipids
b) Glycoprotein
c) Lipoprotein
d) None of the above

27. The light chain of the immunoglobulin is made up of ..... Amino acids
a) 214
b) 314
c) 500
d) 114

28. Immunoglobulins are .....
a) Z shaped
b) B shaped
c) Y shaped
d) M shaped

29. The predominant immunoglobulin present in the blood is
a) Ig G
b) Ig M
c) Ig A
d) Ig D

30. which one of the following is the largest immunoglobulin
a) Ig G
b) Ig M
c) Ig A
d) Ig D

31. Which on of the following antibody is the pentamer
a) Ig G
b) Ig M
c) Ig A

d) Ig D

32. which one of the following antibody is the monomer
    a) Ig G
    b) Ig M
    c) Ig A
    d) None of the above
33. The professional antigen presenting cells are
    a) Dendritic cells
    b) Macrophages
    c) B cells
    d) All the above
34. Which one of the following is the non-professional antigen presenting cells
    a) Skin fibroblast
    b) Throid epithelial cells
    C) Thymic epithelial cells
    d) All the above
35. Electrophoresis separate the antibody based on their .....
    a) Molecular size
    b) electrical charge
    c) Both molecular size and electrical charge
36. Agarose gel electrophoresis and pulsed field gel electrophoresis may be used to resolve respectively
    a). 2000 kb and 20kb DNA
    b) 1000 kb and l0kb DNA
    c) 20 kb and 2000 kb DNA
    d)10 kb and 1000 kb DNA

37. The competitive immunoassay can be used
    a) To detect very small amounts of antigen
    b) To detect antibody associated with allergies (IgE)
    c) Both (a) and (b)
    d) Commonly to detect trace amounts of drugs
38. Which of the following is an immunodiffusion test?
    a)Double-diffusion
    b)Gel diffusion
    c)Ouchterloney technique
    d)All of these
39. What is the ELISA test intended to measure?
    a)Antibody to HIV only
    b)Antigen to HIV only
    c)Presence of free, circulating virus in the patient
    d)Antibodies directed against HLA molecules
40. Radial Immunodiffusion is similar to
    a) Double-diffusion
    b) Gel diffusion
    c) OUCHTERLONEY technique

d) All of these

41. ELISA stands for
    a) Enzyme linked electro sorbent assay
    b) Enzyme linked immune sorbent assay
    c) Energy linked electro sorbent assay
    d) Energy linked immune sorbent assay

42. Agglutination reaction is more sensitive than precipitation for the detection of
    a) Antigens
    b) Antibodies
    c) Complement
    d) Antigen-antibody complexes

43. Precipitation reaction relatively less sensitive for the detection of
    a) Antigens
    b) Antibodies
    c) Complement
    d) Antigen-antibody complexes

44. In which of the following case a large lattice is formed?
    a) Antibody is in excess
    b) Antigen and antibodies are optimal proportions
    c) Antigen is in excess
    d) None of the above

45. precipitation reaction can be converted in to agglutination reaction by coating soluble antigen onto
    a) Bentonite particles
    b) RBC
    c) Latex particles
    d) All the above

46. Monoclonal antibody production requires
    a) mouse splenic lymphocytes
    b) mouse myeloma cells
    c) Both A and B
    d) None of the above

47. Fluorescent treponemal antibody test is an example of
    a) Indirect immunofluoroscence
    b) direct immunofluoroscence
    c) Both A and B
    d) None of the above

48. The counter immunoelectrophoresis is used for the detection of
    a) Meningococcal antigen
    b) Hepatitis B surface antigen
    c) Alpha fetoprotein
    d) All the above

49. The test (s) based on the principle of toxin neutralization is
    a) Nagler's reaction
    b) Schick test

c) Both A and B
d) None of the above

50. The amount of various immunoglobulin classes can be measured by
a) Double diffusion in one dimension
b) Single diffusion in two dimension
c) single diffusion in one dimension
d) Double diffusion in two dimension

51.Epitope is the part of
a) Antigen
b) Antibody
c) Immunoglobulin
d) None of the above

52. Paratope is a part of
a) Antigen
b) Antibody
c) Immunoglobulin
d) None of the above

53. The most effective Ig is
a) Ig G
b) Ig M
c) Ig E
d) Ig A

54. Which of the statements are true regarding antigen
a) Generally self molecules and molecules with low molecular weight are non-immunogenic
b) an antigen generally has many epitopes
c) Heteropolymers are more immunogenic than homopolymers
d) all of the above

55. Small chemical groups on the antigen molecule that can react with antibody
a) epitope
b) paratope
c) isotope
d) allotrope

56. Any agent that may stimulate the immune system and enhance the response without having any specific antigenic effect by itself
a) antigens
b) allergens
c) adjuvants
d) carriers

57. The Ig involved in host defence against parasitic infection (helminths)
a) Ig M
b) Ig G
c) Ig A
d) Ig E

58. The bonds involved in antigen-antibody interactions are

a) Weak hydrogen bonds and vanderwalls forces
b) Strong covalent bonds
c) strong di-sulphide bonds
d) All of these

59. The Ig that mediates allergic reaction is
a) Ig M
b) Ig G
c) Ig A
d) Ig E

60. Graft rejection is not possible in
(A) Xenograft
(B) Autograft
(C) Allograft
(D) Isograft

61. T-cell receptors recognize antigens as
(A) Peptide
(B)foreign molecules
(C) fragments
(D) None of the above

62. T-cell receptors are
(A) Monodimers
(B) Heterodimers
(C) Polyglonal
(D) None of the above

63. The transmembrane segment of t-cell receptor contains
(A) Two α and one β chains
(B) One α and one β chains
(C) Two α and Two β chains
(D) One α and one β chains

64. The Co-receptor of helper T cel CD4 binds with
(A) Class I molecule
(B) Class II molecule
(C) Both A and B
(D) None of the above

65. Which antibody is the B-cell surface receptor
(A) Ig M
(B) Ig E
(C) Ig D
(D) Ig A

66. A single antigen molecule may be composed of many individual _____.
(A) T-cell receptors
(B) B-cell receptors

(c) MHC II
(D) epitopes

67. To what does the TCR of a helper T cell bind?
(A) antigens presented with MHC I molecules
(B) antigens presented with MHC II molecules
(C) free antigen in a soluble form
(D) haptens only

68. Cytotoxic T cells will bind with their TCR to which of the following?
(A) antigens presented with MHC I molecules
(B) antigens presented with MHC II molecules
(C) free antigen in a soluble form
(D) haptens only

69. Which of the following would be a BCR?
(A) CD4
(B) MHC II
(C) MHC I
(D) IgD

70. Which type of hypersensitivity reaction is auto-immunity
(A) Type-I
(B) Type-II
(C) Type-III
(D) Type-IV

71. Allergy to Penicillin is an example of
(A) Type-I
(B) Type-II
(C) Type-III
(D) Type-IV

72. Type-IV hypersensitivity is also called as
(A) Immediate hypersensitivity
(B) Delayed hypersensitivity
(C) Cytotoxic hypersensitivity
(D)Immune complex

73. Allergy to sea foods, eggs etc is an example of
(A) Type-I
(B) Type-II
(C) Type-III
(D) Type-IV

74. If tissues from an animal are transplanted into a human, this is called a
(A) xenograft
(B) Autograft
(C) Allograft
(D) Isograft

75. .....play a main role in transplant rejection.

(A) T-cell

(B) Helper T-cell

(C) HLAs

(D) None of the above