

Immunology MCQ exam

1. All of the following are true with respect to IgM antibodies EXCEPT which one

- A. they fix complement
- B. they occur on the surface of lymphocytes
- C. they predominate in the primary response to antigen
- D. they are glycoproteins
- E. they mediate allergic reaction

2. One principal function of complement is to

- A. inactivate perforins
- B. mediate the release of histamine
- C. Bind antibodies attached to cell surfaces and to lyse these cells
- D. phagocytize antigens
- E. cross link allergens

3. One principal function of the Class I and Class II major histocompatibility complex S proteins is to

- A. transduce the signal to the T-cell interior following antigen binding
- B. mediate immunoglobulin class switching
- C. present antigen for recognition by the T-cell antigen receptor
- D. stimulate production of interleukins
- E. bind complement

4. The major role of the complement system is to work in conjunction with

- A. antibodies to lyse cells via the C8 and C9 components
- B. the major histocompatibility complex for cell recognition
- C. antibodies to opsonize cells
- D. the T-cell receptor for production of lymphokines
- E. antibodies to lyse cells via the perforin molecules

5. T-cell antigen receptors are distinguished from antibodies by which of the following

- A. T-Cell receptors are glycosylated
- B. T-cell receptors must interact with antigen uniquely presented by other cells but not with free antigen
- C. T-Cell receptors bind various cytokines
- D. T-Cell receptors bind complement to lyse cells
- E. T-cell receptors are mediators of allergic reactions

6. T-cell receptors or antibodies react with antigens

- A. because both are made by lymphocytes
- B. because of complementary of molecular fit of both with antigen
- C. because both 'have light chain and heavy chain polypeptides
- D. cause histamine release
- E. facilitate perforin release

7. All of the following are true of antigen EXCEPT which one of the following?

- A. They contain epitopes.
- B. They will react with antibodies.
- C. They contain antigenic determinants.
- D. They can elicit an immune response.
- E. They contain paratopes.

8. All of the following are true with respect to IgE molecules, EXCEPT which one?

- A. They are the principal immunoglobulin class involved in allergic reactions.
- B. They are involved in mediating anti-parasitic immune responses.
- C. They will cross the placenta and fix complement.
- D. They can effect the release of histamine and other chemical mediators.
- E. They are the least abundant immunoglobulin in the serum.

9. Which of the following immunoglobulins is present normally in plasma at the highest concentration?

- A. IgG
- B. IgM
- C. IgA
- D. IgD
- E. IgE

10. All of the following are true about antibodies, EXCEPT which one?

- A. They fix complement.
- B. They occur on the surface of B-lymphocyte
- C. They predominate the primary immune response to antigen.
- D. They are glycoproteins.
- E. They are molecule with a single, defined amino acid sequence.

11. The major immunoglobulin family to which a particular immunoglobulin belongs can be determined by sequential analysis of the 110 amino acids beginning from the

- A. Amino terminus of the light chain.
- B. Carboxy terminus of the light chain.
- C. Amino terminus of the heavy chain.

- D. Carboxy terminus of the heavy chain.
- E. None of the above

12. The immunoglobulin Joining chain (J-chain) is

- A. only produced by T-Cells
- B. only produced by neutrophils
- C. associated with only multimeric forms of IgM and IgA
- D. associated with IgE for histamine release
- E. only produced by mast cells

13. All of the following are true EXCEPT

- A. An epitope is a small portion of a macromolecule
- B. the variable region domains contain the antigen recognition site
- C. an antigenic determinant is a paratope
- D. The class of an immunoglobulin is determined by its heavy chain
- E. An IgG antibody is bivalent

14. Which immunoglobulin is the principal one found in secretions such as milk?

- A. IgG
- B. IgM
- C. IgA
- D. IgD
- E. IgE

15. Individuals unable to make the J protein found in certain immunoglobulins would be expected to have frequent infections of the

- A. brain.
- B. blood.
- C. liver.
- D. pancreas.
- E. intestinal tract.

16. Which of the following statements best characterizes an antibody?

- A. An antibody contains high molecular weight RNA as its basic structure.
- B. An antibody is composed of protein and cannot be distinguished from the albumin fraction of the serum proteins.
- C. An antibody is composed of four identical protein subunits which may be caused to dissociate by treatment with urea.
- D. An antibody contains protein as its major chemical component and its synthesis may be elicited by the administration of a foreign protein or polysaccharide.

E. An antibody contains mucopolysaccharides as its major chemical component and the synthesis of these may be elicited by the administration of a foreign protein or polysaccharide.

17. The immunoglobulin class which is the least abundant in the normal adult is

- A. IgG
- B. IgA
- C. IgM
- D. IgD
- E. **IgE.**

18. Class switching of immunoglobulins occurs

- A. **Usually with booster immunizations, going from IgM to IgG**
- B. binds complement
- C. causes the histamine release
- D. mediates immunoglobulin class switching
- E. results in the glycosylation of immunoglobulins

19. When a B-cell undergoes immunoglobulin class switching

- A. the variable region of the light chain changes, but its constant region remains the same
- B. the variable region of the light chain remains the same, but its constant region changes
- C. **the variable region of the heavy chain remains the same but its constant region changes**
- D. the variable region of the heavy chain changes but its constant region remains the same
- E. both the variable and constant regions change

20. The class of an immunoglobulin

- A. is determined by Class I and Class II major histocompatibility complex proteins
- B. is determined by the carbohydrate attached to the light chain is
- C. determined by the antigen
- D. **is determined by the heavy chain type**
- E. Is determined by the J-chain

21. The class of an immunoglobulin is determined by

- A. the variable region
- B. the J-chain
- C. **the heavy chain**

- D. the carbohydrate
- E. the T3 polypeptide complex

22. Light chains are

- A. specific for each class of antibody
- B. **not specific for each class of antibody**
- C. reactive with antigen
- D. have only a constant region
- E. are composed only of carbohydrate

23. Each of the following is a characteristic of antibodies, EXCEPT which one?

- A. they are proteins with variable and constant regions
- B. they contain carbohydrates
- C. **they are only secreted by T-cells**
- D. they can combine very specifically with antigen
- E. they are structurally organized in globular domains

24. The T3 complex of the T-cell receptor

- A. **probably functions to transduce a signal to the cell's interior following binding of complexed antigen**
- B. binds complement
- C. causes the histamine
- D. mediates Immunoglobulin class switching
- E. results in the glycosylation of immunoglobulins

25. Cytokines are produced by cells of the immune system in response to various physiological stimuli

- A. **modulate cell function through subsequent cell differentiation or cell proliferation**
- B. **facilitate cell lysis**
- C. **cause glycosylation of Immunoglobulins**
- D. **cause histamine release**
- E. **facilitate perforin release**

25. Which of the following uniquely distinguishes the T-cell receptor (TCR) from an antibody?

- A. **The TCR can bind an antigen fragment only in a trimolecular complex with either the class I or class II surface proteins of the major histocompatibility complex**
- B. The TCR can function as a cell surface antigen receptor
- C. The TCR is composed of two different types of polypeptide chains

- D. The TCR is capable of participating in a cytotoxic reaction.
- E. The TCR polypeptides is composed of domains - an amino terminal variable portion at determines the binding specificity and a constant portion that determines the class of the polypeptide chain.

25. Which of the following is NOT true of interleukins?

- A. They are cytokines which can be produced by various cells of the immune system.
- B. They are hormones which allow one cell to communicate with another cell.
- C. They are in need of receptors on the target cell in order to mediate their effects.
- D. **They are able bind antigen with a high level of specificity.**
- E. They are able to modulate various aspects of the B-cell arm of immune system.

25. Which of the following is NOT true of T4 and T8 cell markers?

- A. These are both surface glycoproteins expressed on T-cells.
- B. These serve to distinguish different types of T-cells, e.g., helper, suppressor and cytotoxic, from each other.
- C. These are not found associated with immunoglobulins.
- D. The T4 proteins serve both to mediate T-cell helper function as well as the receptor for the AIDS virus.
- E. **Both of the markers are present on ALL T-cells.**

25. Which of the following is NOT true of the ability of the T-cell receptor (TCR) to specifically recognize antigen?

- A. The antigen must be "processed" first by an accessory cell of immune system in order for it to bind to the TCR.
- B. The recognition of the antigen by the TCR can mediate helper, suppressor or cytotoxic function.
- C. The recognition of antigen by the TCR can result in cytokine secretion and/or an increase in cell proliferation within the immune system.
- D. The antigen is recognized by the T3-TCR complex only when it is associated with a protein of the major histocompatibility complex
- E. **Only the alpha chain of the TCR is necessary for antigen**

For the following questions, choose:

A if only 1,2, and 3 are true

B if only 1 and 3 are true

C if only 2 and 4 are true

D if only 4 is true

E if all are true

30. Complement fixation

1. can be modified by the Cholera toxin
2. has intrinsic Guanylate cyclase activity
3. can be desensitized by phosphorylation
4. is an effector function of IgG and IgM following antigen binding

31. IgE is

1. An allergy associated immunoglobulin
2. the least abundant immunoglobulin in the plasma
3. binds to mast cells
4. can cross the placental barrier

32. IgE

1. is produced by mast cells
2. is produced by B-cells
3. is produced by T-cells
4. binds to mast cells

33. Which of the following are true statements

1. IgM and IgG can fix complement
2. IgA is a secretory immunoglobulin
3. IgE mediates immediate hypersensitivity
4. IgD provides most passively acquired maternal immunity

34. IgE is

1. An immunoglobulin associated with some kinds of allergic reactions
2. the least abundant type of antibody synthesized
3. associated with the mast cell for histamine release
4. produced during the primary immune response before class switching

35. Antibodies are

1. Immunoglobulins
2. composed of variable and constant region domains
3. made of heavy and light chains
4. glycoproteins

36. The antigenic determinate
1. is the combining site of an antibody
 2. is usually no more than five or six amino acids of the antigen
 3. is the paratope
 4. Consists of a small topological feature of the antigen
37. A critical property of an antigen is
1. Its ability to stimulate an immune response
 2. a unique topological feature called an paratope
 3. a unique topological feature called an epitope
 4. not a unique topological feature called an antigenic determinant
38. An antigenic determinant is
1. a small topological feature of a large macromolecule such as A protein or carbohydrate
 2. specifically recognized by a epitope
 3. specifically recognized by a paratope
 4. specifically recognized by the T4 protein
39. Immunoglobins
1. are antibodies
 2. are classified into five major classes, i.e., IgM, IgG, IgA, IgD, IgE
 3. have a molecular specificity to recognize unique epitope
 4. possess both variable and constant region domains
40. The basic monomeric Immunoglobulin unit is
1. composed of four; polypeptide chains
 2. only an integral membrane protein and never secreted
 3. one of five major classes
 4. synthesized by a T-cell without carbohydrate
41. Antibodies
1. are carbohydrates
 2. are made from alpha and beta chains
 3. contain no carbohydrate
 4. contain heavy and light chains
42. The basic monomeric immunoglobulin unit is
1. composed of four polypeptides chains
 2. representative of a single protein type for all antibody classes
 3. able to associate with J- chain to form multimers in some cases
 4. the same structure as the T-cell antigen receptor
43. The basic monomeric form of an immunoglobulin
1. is a tetramer consisting of two light and two heavy chains
 2. is associated with J-chain in the IgD
 3. can occur as multimers with IgA and IgM
 4. exists only on the cell surface of B-cells
44. Class II MHC proteins are
1. Recognized by the T4 (or CD4) protein
 2. used to mark a cell for killing by cytotoxic T-cells
 3. used to participate in helper function
 4. not able to carry an antigen fragment

45. The major histocompatibility complex proteins function to
1. degrade T4 and T8 polypeptides
 2. bind antibody for lymphokine production
 3. bind complement for cell lysis
 4. bind antigen fragments for presentation to T-cells
46. Class I MHC proteins are
1. able to carry an antigen fragment
 2. recognized by the T8 (or CD8) protein
 3. used in combination with an antigen fragment to mark a cell for killing by cytotoxic T-cells
 4. used' to participate in helper function
47. Which Is TRUE for BOTH the T-cell antigen receptor and the antibody
1. They undergo class switching
 2. They can be secreted
 3. They possess J-chains
 4. They can exist as cell surface receptor, integral membrane proteins.
48. The T-cell antigen receptor and antibody share the following features
1. They contain variable and constant region domains
 2. They both possess paratopes that can recognize epitopes
 3. They are associated with accessory proteins necessary for signal transduction after antigen recognition
 4. They are multivalent
49. Which properties do the T-cell receptor and the antibody share in common
1. Both recognize antigen or antigen fragments
 2. Both are able to fix complement
 3. Both are composed of multiple polypeptide chains folded into discrete domain units
 4. Both are composed of four polypeptide chains
50. The antigen combining site of the T-cell receptor and antibody are
1. located at the amino terminal of the structures
 2. a pocket complementary' to the epitope
 3. capable of combining with a single antigenic determinant
 4. identified by light chain kinase
51. The specific type of functional activity of a T-cell following antigen recognition is determined by the
1. antigen receptor
 2. Type of MHC class protein presenting the antigen fragment
 3. carbohydrate side chains
 4. T4 (CD4) or T8 (CD8) associated polypeptides
52. The domain unit of an immunoglobulin or T-cell antigen receptor
1. only include the variable regions
 2. only recognizes the paratope
 3. only fixes complement
 4. is typically about 110 amino acids long
53. Which of the following are MOST closely related to each other
1. Antigen

2. Allergen
 3. Epitope
 4. Antibody
54. Immunoglobulins are produced by
1. Plasma cells
 2. T-cells
 3. B-cells
 4. Macrophages
55. Antibodies are distinguished from antigens, because they
1. can only be proteins
 2. always have carbohydrate attached to their heavy chains
 3. can only be made by B-cells and plasma cells
 4. contain nucleic acids
56. Antibodies are distinct from antigens
1. because they can only be proteins
 2. because they are only produced by B-cells
 3. because they are not normally recognized as "foreign"
 4. because they are only produced by T-cells
57. Antigen-antibody reactions can result in the following:
1. Agglutination
 2. complement fixation
 3. virus neutralization
 4. allergic reactions
58. Effector functions of immunoglobulins are
1. The property of the constant region domains of L-chains
 2. The property of the constant region domains of J-chains
 3. The property of the variable region domains of H-chains
 4. The property of the constant region domains of H-chains
59. Effector functions of Immunoglobulins are
1. Involved in complement fixation by IgM and IgG
 2. the property of constant region domains of heavy chains
 3. illustrated by placental transfer of IgG to the fetus
 4. not the property of constant region domains of the light chains
60. Domains of immunoglobulins are
1. units of approximately 110 amino acids in length
 2. found in constant regions and variable regions
 3. compact globular units of heavy and light polypeptide chains
 4. the carbohydrate side chain
61. Variable region domains are
1. located at the N-terminus of immunoglobulin light and heavy chains.
 2. about 110 amino acids in length
 3. the specific recognition site for the antigen
 4. different and unique for each B-cell producing them
62. Variable regions domains are:
1. needed to bind complement to initiate this cascade
 2. located at the N-terminal of light and heavy chains

3. necessary to facilitate transport across the placenta
 4. necessary for specific recognition of antigen
63. The two type of light chains of antibodies are distinguished
1. by their constant region amino acid sequence
 2. by their variable region domains
 3. as kappa or lambda types
 4. by the J-chains that bind to them
64. The two type of light chains of antibodies are
1. able to associate specifically with T4 or T8 proteins
 2. normally not glycosylated
 3. the basis of the five major classes of antibodies
 4. distinguished by their constant region domains
65. The J-chain
1. is made only by epithelial cells
 2. is responsible for immunoglobulin multimer formation
 3. Is present in monomeric forms of immunoglobulin
 4. facilitates secretion of pentameric IgM
66. Immunoglobulin class switching is a phenomenon that
1. Changes the heavy chain constant region without changing the variable region
 2. always goes from IgM to another immunoglobulin class
 3. is Influenced in part by cytokines produced by T-cells following a booster immunization
 4. changes effector function without altering specific antigen recognition
67. Fc receptors
1. Occur on the cell surface of cells of the immune system
 2. recognize the variable region domains of the immunoglobulin heavy chain
 3. recognize the constant region domains of the immunoglobulin heavy chain
 4. recognize the constant region domains of the immunoglobulin light chain
68. The T3 or CD3 component of the T-cell receptor
1. Is composed of three polypeptide chains
 2. specifically recognizes antigen bound to class I and class II MHC proteins
 3. participates in transducing the antigen recognition signal to the T-cells interior
 4. occurs only on accessory cells such as macrophages
33. The T-cell receptor
1. Is composed of four polypeptide chains
 2. is secreted into the plasma by the T-cell
 3. Is the recognition element of the humoral arm of the immune system
 4. recognizes antigen fragments via the alpha and beta chains

34. Killer T-cells effect their killing

1. by antibodies with specific recognition capabilities
2. by Inserting the complement components, C5 and C9, into the target cell membrane
3. by the T- cell antigen receptor and Class MHC proteins
4. **By inserting a pore forming protein called perforin into the target cell membrane**

35. The functional activity of the T-cell

1. **Is dictated by the T4 or T8 associated polypeptides**
2. **occurs after recognition of an epitope by a paratope**
3. **can be mediated through cytokines**
4. requires only the alpha and beta chains of the T- cell receptor

72. Target cell lysis and destruction can be achieved by

1. **Cytotoxic T-cells recognizing specific epitopes on the target cell surface**
2. **perforin released from antigen-specific cytotoxic T-cells**
3. **Complement binding to IgG and IgM type antibodies which have bound to epitopes on the target cell surface**
4. **Complement binding to IgE type antibodies which have bound to epitopes on the cell surface**

73. Which of the followings are TRUE?

1. **Class I proteins bind antigen fragments and are recognized by the T-cell receptor and the T8 or CD8 protein**
2. **Class I proteins generally occur on all cells of the immune system**
3. **Class II proteins bind antigen fragments and are recognized by the T-cell receptor and the T4 or CD4 protein**
4. **Class II proteins carrying antigen fragments identify normal cells as foreign and result in their cytotoxic destruction**

74. What distinguishes helper T-cells from cytotoxic T-cells

1. **helper cells recognize antigen complexed with MHC class I molecules**
2. **cytotoxic cells recognize antigen complexed with MHC class I molecules**
3. **cytotoxic cells recognize antigen complexed with MHC class II molecules**
4. **helper cells recognize antigen complexed with MHC class II molecules**

75. Cytokines

1. **are polypeptide hormones synthesized by specialized cells**
2. **are lymphokines**
3. **are monokines**
4. **help to control and regulate the immune response**

76. Cytokines are

1. **Produced by cells of the immune system in response to various physiological stimuli**
2. **able to stimulate an increase in antibody production**
3. **able to activate T-cells**

4. **able to increase B-cell proliferation**
77. **Lymphokines**
1. **can stimulate immunoglobulin class switching**
 2. **can stimulate increase antibody production**
 3. **can stimulate maturation of immature cytotoxic T-cells**
 4. **are a specific class of cytokines**
78. **The major purpose of lymphokines is to**
1. **bind to class I major histocompatibility molecules for cytotoxic function**
 2. **specifically recognize antigens or their fragments**
 3. **stimulate the production of complement**
 4. **help control and regulate the cells of the Immune system**
79. **Immediate hypersensitivity reactions**
1. **Are experienced if the antigen is an allergen**
 2. **result from histamine and other chemical mediator release**
 3. **mediated through antigen specific IgE and mast cells**
 4. **are a consequence of antigen-antibody reactions**
80. **Which immune dysfunctions result in clinical abnormalities of the**
1. **leukemia, multiple myeloma and lymphoma**
 2. **autoimmune diseases**
 3. **acquired immunodeficiency disease (AIDS) caused by HIV**
 4. **Bruton's agammaglobulinemia, DiGeorge Syndrome and Severe Combined Immunodeficiency**
81. **Clinical abnormalities of the Immune system can result from**
1. **deficiency diseases**
 2. **abnormal lymphocyte proliferation**
 3. **HIV Infection**
 4. **autoimmune disease**
82. **Which of the following represent immune system dysfunctions**
1. **Severe immunodeficiency (Swiss agammaglobulinemia)**
 2. **Bruton's agammaglobulinemia**
 3. **DiGeorge syndrome**
 4. **acquired immune deficiency syndrome**
83. **The immune response**
1. **is mediated via the humoral and/or cellular arms of the immune system**
 2. **can be facilitated through antibodies**
 3. **can be facilitated through T-cells**
 4. **can be facilitated through cells of the reticuloendothelial system**
84. **Which of the followings are TRUE regarding an Immune response**
1. **the principal function of the T3 complex is signal transduction to the cell's interior after recognition of the molecular complex with antigen**
 2. **the T8 protein serves an auxiliary role with MHC class I proteins in cytotoxic reactions**
 3. **the T4 protein serves an auxiliary role with MHC class II proteins in helper cell reactions**

- 4. lymphokines are produced by T-cells in response to antigen presentation by Ig molecules**