All questions have equal point value. You may keep the test questions.

Multiple Choice (choose the best answer)

1. Receptors associated with innate immunity recognize microbes by detecting:
   a. insulin.  
   b. pathogen associated molecular patterns (PAMPs).  
   c. Fc’s.  
   d. complement.  
   e. none of the above.  
   **Correct**

2. Immunoglobulin classes must distinguished by the type of:
   a. light chains they possess.  
   b. carbohydrate on their light chains.  
   c. constant regions in their light chains.  
   d. heavy chains they possess.  
   e. none of the above.  
   **Correct**

3. The variable regions in the light chains participate in:
   a. Fc receptor binding.  
   b. epitope binding.  
   c. affinity of the complement receptors.  
   d. interaction of the Fab with cytokines.  
   e. none of the above.  
   **Correct**

4. Plutonian immunoglobulin molecules follow the same rules of proportions that are found in human immunoglobulins. If you were told that Plutonian light chains had a molecular weight of 4 kDa (each), what would you expect the molecular weight of their IgG molecules to be?
   a. 150,000 kDa  
   b. 900,000 kDa  
   c. 12 kDa  
   d. 8 kDa  
   e. none of the above.  
   **Correct**

5. J-chains are associated with:
   a. IgG.  
   b. polymeric immunoglobulins (more than two Fab’s).  
   c. serum IgA  
   d. IgE.  
   e. none of the above.  
   **Correct**
6. Adoptive-acquired immunity may be the result of:

Correct
   a. transfer of bone marrow from one individual to another.
   b. immunization with a vaccine.
   c. exposure to an individual who has an infectious disease.
   d. a physician administering a gamma globulin shot to someone who has had a needle stick (immunoglobulins).
   e. a and d.

7. IgG binding to neutrophils cells is mediated by:

   a. Fc-dependent cellular homing mechanisms.
   b. sensitization of Mast cells and basophils.
   Correct
   c. Fc receptors specific for IgG.
   d. ICAM’s.
   e. none of the above.

8. IgD participates in antigen recognition by:

   a. immature T cells.
   b. NK cells.
   c. macrophages.
   Correct
   d. B cells.
   e. none of the above.

9. Antibody affinity is not determined by the amino acid sequence in:

   a. the constant regions of the immunoglobulin molecule.
   b. the variable regions of the immunoglobulin molecule.
   c. the Fc of the immunoglobulin molecule.
   Correct
   d. the J-chain.
   e. a, c and d.

10. Avidity is important because:

   Correct
   a. it amplifies the binding strength of low affinity Fab’s.
   b. Fc receptor binding depends on it.
   c. G-protein-mediated signal transduction will not occur without it.
   d. it result in the activation of high affinity antibody-producing clones.
   e. none of the above.

True/False (Please use “a” for true and “b” for false on your answer sheet)

T  11. M-cells often enable pathogens to penetrate the epithelial cell layer of the mucosa.
T  12. Cross-reaction is the result of epitopes common between two different antigens.
T  13. In an ELISA, the use of a “second” labeled antibody is required to detect patient serum antibodies that bind to the antigen.
T  15. Agglutination generally occurs only with IgM antibodies.
F 16. The complement system is not responsible for the production of neutrophil chemoattractants.
T 17. Complement may be activated in the absence of an antibody/antigen reaction.
T 18. One would not expect to find SC associated with monomeric IgA in the serum.
F 19. Inflammatory reactions are often associated with mucosal immunity.
T 20. CD antigens are used to identify cell types and their functions.

Multiple Choice (choose the best answer)

21. Organized mucosa-associated lymphoid tissue is
   a. found in the lymph nodes.  Correct
   b. associated with initial immune response to antigen.
   c. filled with plasma cells that are producing antibodies.
   d. composed primarily of M-cells and L-cells.
   e. none of the above

22. B cells usually require T cell help to mature plasma cells because:
   a. T cells present antigen to them.
   b. most B cells in the circulation need thymic hormones secreted by the antigen presenting cell to mature to plasma cells.
   c. T cells are antigen presenting cells that are critical to immune recognition.
   d. all of the above.
   Correct e. none of the above.

23. The antigen presenting cell
   Correct a. may be a dendritic cell in the skin.
   b. may be a T cell.
   c. does not produce cytokines which influence the adaptive response.
   d. matures upon antigenic stimulation and becomes a plasma cell.
   e. all of the above.

24. Mucosal immunity provides most of its protection by blocking
   a. microbial receptors specific for colonization. Correct d. a and c
   b. the complement cascade.
   c. blocking penetration of undigested food products into the mucosal tissues.
   d. none of the above

25. Tissue macrophage are mature:
   a. B cells
   b. T cells
   c. NK cells Correct d. Monocytes
   d. none of the above.
26. Hormone-like host peptides used for communications in innate and adaptive immunity are known as:
   a. PAMPs.
   b. cell adhesion molecules.
   c. ELISAs.
   d. cytokines.
   e. none of the above.  
   **Correct**

27. Which of these is not associated with adjuvants?:
   a. forms an antigen depot.
   b. provides non-specific T cell stimulation.
   c. activates antigen-presenting cells.
   d. activates the complement cascade.
   e. none of the above.
   **Correct**

28. Which is associated with apoptosis?
   a. Regulates cell migration from O-MALT migrate to D-MALT.
   b. Used by T cells to kill target cells.
   c. mediates necrotic cell death.
   d. a and b.
   e. all of the above are correct responses.
   **Correct**

29. The lag phase of the secondary response is shorter than the primary response because:
   a. the assays for detecting a primary response are not as sensitive.
   b. the primary response requires considerable cell proliferation and differentiation to achieve a critical mass of cells to produce immunity.
   c. of the lack of cytokines produced during the primary response.
   d. a and d.  
   e. none of the above.
   **Correct**

30. The lag phase of the booster response is:
   a. very short, due to memory cells.
   b. very short due to the lack of antigen presenting cells.
   c. very short when dendritic cells are absent.
   d. very short, due to the presence of accessory cells.
   e. none of the above.
   **Correct**

**True/False (Please use “a” for true and “b” for false on your answer sheet)**

Correct 31. Dendritic cells are antigen presenting cells.
Correct 32. Homing is a process by which cells leave the O-MALT and randomly migrate until they encounter vascular addressins that bind to their cell surface receptors in D-MALT.
Correct 33. Affinity maturation is the result of clonal section over time.
Correct 34. The innate mechanisms of host immunity generally play a role in the defense of the body prior to the activation of adaptive defense mechanisms.
False 35. Fc and complement receptors on phagocytic cells prevent opsonized bacteria from being pulled into phagocytic vacuoles.
False 36. Atopic individuals are people who tend to make undetectable amounts of IgE antibodies.

Correct 37. Mast cell degranulation occurs as a result of cross-linkage of Fc receptors on Mast cells.

Correct 38. Serum sickness occurs when massive amounts of foreign proteins are introduced into the body.


Correct 40. Desensitization injections are thought to increase T cell suppressor cell activity and decrease IgE synthesis in atopic patients.

Multiple Choice (choose the best answer)

41. The location of complement activation is determined by:
   a. the location of Fc receptors.
   b. the location of dendritic cells.
   c. the location of specific antibody/antigen complexes.
   d. b and c.
   e. none of the above.

Correct

42. Complement damage is generally limited to the immediate area in which complement is activated because of the:
   a. short half-lives of the activated complement components and their rapid inactivation.
   b. very low concentrations of the inactivated complement components in serum.
   c. the inability to activate the system in the presence of IgG antibodies.
   d. once activated, the destructive activities of complement are non-specific.
   e. none of the above.

Correct

43. Sensitization to foods is minimized by secretory IgA antibodies by:
   a. The inflammatory response that occurs in the presence of food, these antibodies and complement.
   b. Destroying the antigen presenting cells that would normally present the food antigens to T cells in the gut.
   c. Blocking the penetration of intact food products into the gut.
   d. All of the above
   e. None of the

Correct

44. Serum from an O positive, Rh negative patient agglutinates red blood cells from a patient who is Rh negative. What is the likely blood type is the second patient?

Correct

a. It can’t be determined from the information provided.

b. Type A

c. Type B

d. Type O

e. Type AB
45. Transepithelial transport of antigen is important because without it
   a. antigen would only be detected by the lymphoid cells in O-MALT.
   b. antigen would not be detected by the lymphoid cells in the alternate complement pathway.
   c. polymeric antibody would be pumped through the epithelial cells
   d. vascular addressins would target the wrong cell types.
   Correct: none of the above

46. During serum sickness, kidney damage occurs as immune complexes form. Why?
Correct
   a. The immune complexes are filtered by the kidneys and damage results from concomitant complement activation and neutrophil activity.
   b. Antigen presenting cells rapidly bind all of the complexes in their MHC-encoded receptors.
   c. Free antigen activates PAMP receptors in the kidneys which rapidly activate adaptive immunity.
   d. The immune complexes bind to Mast cells and are destroyed.
   e. none of the above

47. Contact dermatitis generally occurs against substances that are too small to induce an immune response. How do these substances induce an immune response?
Correct
   a. These substances form depots and are then slowly released into the blood.
   b. These low molecular weight substances react with liver enzymes and are difficult to eliminate.
   c. These substances bind to tissues and cells, resulting in a larger total antigenic size which can then stimulate an immune response.
   d. The substances trigger the complement cascade and cause neutrophils to accumulate and to serve as antigen presenting cells.
   e. a and c.

48. Your patient tests positive for the tuberculin antigen. You send him for a chest x-ray because:
Correct
   a. the tuberculin test is only presumptive, indicating that he has been exposed to a tuberculosis antigen.
   b. He may have other lung infections.
   c. you are looking for fluid in his lungs due to inflammation caused by the bacillus
   d. a and b.
   e. none of the above

49. Microorganisms associated with periodontal disease, such as Porphyromonas gingivalis, are thought to control the cytokine expression and affect TH1 and TH2 pathways by:
Correct
   a. suppressing Mast cell activity.
   b. stimulating PAMP receptors of innate immunity to express cytokines that result in an adaptive response that is not protective
   c. avoiding PAMP receptors and, thereby, avoiding innate immunity.
   d. stimulating adrenergic receptors.
   e. none of the above
50. Innate host defense mechanisms are critical to the protection of the body because:
   a. they utilize pre-committed antigen presenting cells that have already been induced by other immune responses.
   b. the antibodies derived from the innate response are critical to neutralize bacterial toxins.
   c. they are highly specific for the invading pathogens that avoid PAMP receptor recognition.
   d. they provide immediate, continuous protection in the absence of a specific immune response.
   e. b and d

Correct