- 1. Eosinophils are involved in the immune response against:
 - A) viruses
 - B) intracellular bacteria
 - C) multicellular parasites
 - D) extracellular bacteria
- 2. Which of the following are considered to be an acute phase protein?
 - A) serum amyloid A
 - B) streptolysin O
 - C) cardiolipin
 - D) reagin
- 3. A patient is tested for the presence of C-reactive protein and is found to have an elevated level. What does this indicate is taking place in the patient?
 - A) inflammation
 - B) nothing, the patient is normal
 - C) impossible to determine anything
- 4. Which of the following are directly used in oxidative killing of target cells?
 - A) hydrogen peroxide
 - B) lysozyme
 - C) defensin
 - D) TNF-alpha
- 5. A protein that only changes in concentration significantly in response to inflammation and is not detectable when there is no inflammation is called a/an:
 - A) reagin
 - B) immunoglobulin
 - C) complement protein
 - D) acute phase protein
- 6. Which of the following can be measured as an indicator of inflammation?
 - A) temperature
 - B) number of WBCs
 - C) erythrocyte sedimentation rate
 - D) two of these
 - E) all of these

- 7. Which of the following are components of innate (natural) immunity?
 - A) immunoglobulin
 - B) Thelper cells
 - C) macrophages
 - D) B cells
- 8. Neutrophils and macrophages use all of the following to kill bacteria EXCEPT:
 - A) H_2O_2
 - B) perforin
 - C) hydroxyl radical
 - D) lysozyme
 - E) superoxide anion
- 9. Which is a characteristic of circulating neutrophils (PMN)?
 - A) lyse cells with perforin
 - B) recognize antigen with an antigen-specific receptor
 - C) have surface receptors for Fc of IgG
 - D) have surface receptors for C5a
- 10. What is the name of the process by which phagocytic cells are attracted toward a substance such as complement fragment C3a?
 - A) diapedesis
 - B) degranulation
 - C) chemotaxis
 - D) opsonization
- 11. The function(s) of macrophages/monocytes in the host immune response is (are):
 - A) antigen presentation
 - B) phagocytosis
 - C) secretion of cytokines
 - D) all of these
- 12. Acute phase reactants have been determined to be elevated in a patient. What does this result on its own indicate about the patient?
 - A) Inflammation of unknown cause is present.
 - B) Patient has a leukemia but not a lymphoma.
 - C) This is a normal result.
 - D) There is a parasitic infection and not a viral infection.

- 13. The phagosome of a macrophage is a membrane-bound vesicle that contains:
 - A) enzymes
 - B) reactive oxygen intermediates
 - C) ingested bacteria
 - D) perforin and granzymes
- 14. Oxidative killing involves which of the following?
 - A) perforin and granzymes
 - B) activation of complement
 - C) direct cytokine-mediated killing
 - D) formation of reactive oxygen intermediates
- 15. Macrophages recognize target cells using which of the following?
 - A) MHC class II
 - B) mannose receptors
 - C) T-cell receptor
 - D) killer cell inhibitory receptors
- 16. Diapedesis is:
 - A) movement of cells in response to increasing concentration of a cytokine
 - B) attachment of immunoglobulin to target cells
 - C) cells squeezing through endothelial cells to leave the circulation
 - D) engulfment of target cells
- 17. The function(s) of macrophages/monocytes in the host immune response is (are):
 - A) antigen presentation
 - B) phagocytosis
 - C) secretion of cytokines
 - D) all of these
- 18. The respiratory burst is:
 - A) an increase in oxygen consumption
 - B) pseudopodia extending around a particle
 - C) the release of granules from a cell
 - D) the sudden exhale of a cell

19. Which of the following is part of the external defense system? A) ceruloplasmin B) skin C) neutrophils D) complement 20. Which is characteristic of natural immunity? A) Memory is involved. B) Lymphocytes play a major role. C) It is very specific. D) It depends on normally present body functions. 21. What is the major function of C-reactive protein (CRP)? A) acts as an opsonin B) binds hemoglobin C) causes vasodilation D) helps to form clots 22. All of the following are considered part of natural immunity EXCEPT: A) eosinophils B) lymphocytes C) acute phase reactants D) neutrophils 23. Where does the immune response to foreign antigen in the tissue mainly occur? A) lymph nodes B) blood C) bone marrow D) skin 24. Which white cell in the peripheral blood migrates to the tissue to become a macrophage? A) eosinophil B) basophil C) neutrophil

D) monocyte

25. Which of the following acute phase reactants is an important clotting factor? A) haptoglobin B) ceruloplasmin C) fibrinogen D) alpha-2 macroglobulin 26. Which substance best inactivates bacterial proteins? A) NADP B) oxygen C) OC1 D) lactic acid 27. A white blood cell that is 16 to 18 μm in diameter, has a horseshoe-shaped nucleus, and is capable of further differentiation in the tissues best describes: A) neutrophil B) eosinophil C) basophil D) monocyte 28. Jenner's discovery that cowpox generated immunity against smallpox is based on the principle of: A) attenuation of a harmful substance B) natural immunity C) passive immunity D) cross-immunity 29. All of the following are characteristic of acute phase reactants EXCEPT: A) increase rapidly in response to infection B) used to diagnose a specific disease C) enhance phagocytosis D) promote inflammation 30. What is the function of the acute phase protein haptoglobin? A) acts as an opsonin B) forms clots C) binds hemoglobin

D) acts as a chemotaxin

- 31. Measurement of CRP levels could be used for which of the following?
 - A) to determine risk of a heart attack
 - B) to determine flare-up of rheumatoid arthritis
 - C) to detect an inflammatory process
 - D) all of the above
- 32. Acquired (adaptive) immunity can be characterized by which of the following?
 - A) nonspecific
 - B) immediate response
 - C) depends on neutrophils and macrophages
 - D) involves memory
- 33. Neutrophils are characterized by all of the following EXCEPT:
 - A) found in the marginating pool in blood vessels
 - B) capable of diapedesis
 - C) granules stain bright orange with Wright stain
 - D) segmented nucleus
- 34. All of the following occur during the process of inflammation EXCEPT:
 - A) increased capillary permeability
 - B) migration of basophils to tissue
 - C) increase in blood flow
 - D) swelling and pain
- 35. Which of the following best explains the reaction that takes place in the latex agglutination slide test for CRP?
 - A) Latex particles are coated with anti-CRP.
 - B) Latex particles are coated with CRP.
 - C) Latex particles are nonspecifically bound.
 - D) CRP is acting as an antibody.
- 36. Which of the following is true of NK cells?
 - A) They produce antibody.
 - B) They are capable of phagocytosis.
 - C) They have markers CD4 and CD16.
 - D) They kill tumor and virally infected cells.

- 37. Which of the following is NOT characteristic of acquired immunity?
 - A) Memory is involved.
 - B) Lymphocytes play a major role.
 - C) It is very specific.
 - D) It depends on normally present body functions.
- 38. All of the following are characteristic of a lymph node EXCEPT:
 - A) filters drainage from tissues
 - B) colonized with T and B cells
 - C) between 1 and 25 mm in size
 - D) considered a primary or central lymphoid organ
- 39. Which of the following represents the best explanation for the action of natural killer (NK) cells?
 - A) They recognize specific antigen.
 - B) They kill if MHC class I is present.
 - C) They kill by releasing perforins.
 - D) They participate in phagocytosis.
- 40. All of the following are considered part of natural immunity EXCEPT:
 - A) eosinophils
 - B) lymphocytes
 - C) acute phase reactants
 - D) neutrophils
- 41. Macrophages that migrate to the liver are called:
 - A) alveolar macrophages
 - B) histiocytes
 - C) microglial cells
 - D) Kupffer cells
- 42. Acquired immunity can be characterized by which of the following?
 - A) nonspecific
 - B) immediate response
 - C) depends on neutrophils and macrophages
 - D) involves memory

- 43. The ability to resist infection through normally present body functions best characterizes:
 - A) autoimmunity
 - B) natural immunity
 - C) acquired immunity
 - D) alloimmunity
- 44. A white blood cell described as between 12 to 22 μm with a large horseshoe-shaped nucleus that further differentiates in the tissue to become a macrophage best describes:
 - A) neutrophil
 - B) lymphocyte
 - C) basophil
 - D) monocyte
- 45. Which of the following is considered part of the internal defense system?
 - A) cilia
 - B) mucous membranes
 - C) neutrophils
 - D) acidity of the skin
- 46. All of the following are part of the process of phagocytosis EXCEPT:
 - A) formation of a phagosome
 - B) creation of hypochlorite radicals
 - C) formation of fibrin clots
 - D) outflowing of cell cytoplasm
- 47. All of the following are examples of natural immunity EXCEPT:
 - A) skin as a structural barrier
 - B) acute phase reactants
 - C) phagocytosis
 - D) antibodies
- 48. If a slide test for CRP is positive, what does this indicate?
 - A) It is a nonspecific indicator of inflammation.
 - B) Patient has lupus.
 - C) Patient is immunocompromised.
 - D) Patient has a strep infection.

- 49. All of the following are considered acute phase reactants EXCEPT:
 - A) fibrinogen

 - B) complementC) C-reactive protein
 - D) TNF-alpha

Answer Key

- 1. C
- 2. A
- 3. A
- 4. B
- 5. D
- 6. E
- 7. C
- 8. B
- 9. C
- 10. C
- 11. D
- 12. A
- 13. C
- 14. D
- 15. B
- 16. C
- 17. D
- 18. A
- 19. B
- 20. D
- 20. D
- 22. B
- 23. A
- 24. D
- 25. C
- 26. C
- 27. D
- 28. D
- 29. B
- 30. C
- 31. D
- 32. D
- 33. C
- 34. B
- 35. A
- 36. D
- 37. D
- 38. D
- 39. C
- 40. B
- 41. D
- 42. D
- 43. B
- 44. D

- 45. C
- 46. C
- 47. D
- 48. A
- 49. D