Study Questions

Name________________________  Date________________________

Directions: These study questions are provided for your use in preparation for the serology rotation final exam. Answers are within reading assignments, lecture presentations, or from product inserts. These will NOT be graded and are to be used for you to evaluate your own level of knowledge.

1. Briefly define the following:
   a. active immunity
   b. passive immunity
   c. antibody titration

2. Contrast naturally produced immunity from artificially produced immunity.

3. Contrast primary and secondary (anamnestic) immune responses as to length of latent phase, speed of antibody production, and general class of antibody produced.

4. Identify the two types of light chains found in human immunoglobulin?

5. Which immunoglobulin class is found in the highest concentration in normal human serum?
   a. IgM
   b. IgG
   c. IgA
   d. IgD
6. What is the first antibody produced in humoral immunity? Which antibody class is produced in anamnestic response?

7. Identify the term used to describe an antibody which binds complement and causes red cell lysis.

8. List four factors which influence antigen-antibody reactions.

9. Compare and contrast hapten with antigen.

10. What is the numbered order in which the complement components are activated in the classical pathway? alternate pathway?

11. Compare agglutination with hemagglutination.

12. Briefly describe the four reaction combinations that occur in gels.

13. Describe radial immunodiffusion (RID). Include what is mixed in the agar, and what is being quantitated and how.

14. Compare and contrast RID and Ouchterlony gel diffusion?
15. What three principle type of reactions may be observed in Ouchterlony gel diffusion?

16. Compare the terms “competitive” and “non-competitive” as they relate to immunoassays.

17. Compare the terms “homogeneous” and “heterogeneous” as they apply to immunoassays.

18. Use a separate sheet of paper to BRIEFLY describe the following methods:
   a. Turbidimetry
   b. Nephelometry
   c. Electrophoresis
   d. Immuno-electrophoresis
   e. Immunofixation electrophoresis
   f. Radioimmunoassay
   g. Immunoradiometric assay (IRMA)
   h. Enzyme Immunoassay (ELISA)
   i. Fluorescent Immunoassay
   j. Fluorescent Polarization
   k. Chemiluminescent Immunoassay
   l. Nucleic Acid Probe
   m. Hybridization Techniques
      i. Dot-blot
      ii. Sandwich hybridization
      iii. Southern blot
      iv. Northern blot
   v. Solution hybridization
   vi. In-situ hybridization
   vii. DNA Microarray
   n. Target amplification
      i. Polymerase Chain Reaction (PCR)
      ii. Ligase Chain reaction

19. What is the pathogenic organism responsible for human syphilis?

20. How is human syphilis transmitted?
21. Describe the symptoms and results of serologic tests for each stage of syphilis.

   Primary
   1st week
   2nd week

   Secondary

   Late Latent

   Tertiary

22. Identify 2 syphilis tests that are classified as “reagin” tests. Describe the next step if a positive reagin test is obtained on a patient?

23. Define biologic false positive as it relates to syphilis testing.

24. List at least four (4) causes of false-negatives in the VDRL and RPR test.

25. Compare and contrast the VDRL and RPR tests as to the substance detected, antigen used, time and speed of rotation, and how the test is read.

   Substance detected -
   antigen make-up -
   time/speed of rotation of test card/slide
   method used to read test results

26. The antigen carrier in the RPR test is
   a. red blood cells
   b. latex particles
   c. bacterial suspension
   d. charcoal
27. State the expected results for the following RPR Quality Control checks.
   a. needle delivery
   b. rotator RPM
   c. room temperature
   d. control serums

28. List four specific Treponemal tests which may be performed when a positive reagin test is obtained.

29. What are the challenges for testing infants for syphilis?

30. What type of syphilis test is performed on CSF?

31. What is C-reactive protein?

32. What is the principle of the CRP latex agglutination test?

33. What are two (2) advantages that the CRP test has over the erythrocyte sedimentation rate (ESR) test?

34. An elevated titer of cold agglutinins is found in what percentage of patients with primary atypical pneumonia?
   a. 100%
   b. 90%
   c. 55%
   d. 20%

35. Identify the causative agent of primary atypical pneumonia.
36. State the principle of the cold agglutinin test including the specificity of the antibody involved.

37. In the cold agglutinin titer what would indicate a clinically significant rise in titer?

38. In the cold agglutinin titer state the contents of tube 12 and the expected result. What must be done if the expected result is not obtained?

39. What chronic inflammatory disease affects primarily the joints and periarticular tissues?

40. What is rheumatoid factor? What is its specificity?

41. State the principle of the latex agglutination test for rheumatoid arthritis?

42. State the organism responsible for the condition known as “Strep throat” (genus and species)?

43. List two sequella which may occur if a strep throat is left untreated.

44. List the term used for the skin infection caused by strep.

45. List five exoantigens which are produced by Strep.

46. List five antibodies produced in response to a Strep infection which are most useful for laboratory testing.
47. State the principle of the Streptozyme test (get from laboratory procedure).

48. State the causative agent of infectious mononucleosis?

49. Briefly list the symptoms of an infectious mononucleosis infection.

50. Describe the hematological picture seen on a peripheral smear in infectious mononucleosis including which white cell type will be most predominant.

51. Define the following terms: heterophile antigen, heterophile antibody, Forssman antigen and Forssman antibody.

52. What is the principle of the Paul Bunnell screening test for infectious mononucleosis? What is the significance of a positive test?

53. State the principle of the mononucleosis slide test.

54. Describe the transmission of cytomegalovirus.
**Serology Review Questions**

55. Describe the clinical symptoms of cytomegalovirus infection including populations most at risk.

56. Briefly list laboratory methods used for the diagnosis of cytomegalovirus infection.

57. State the substance which is detected in a positive pregnancy test.

58. How long may a urine sample be used for a pregnancy test if stored at room temperature? If stored in the refrigerator?

59. State the principle of the following types of pregnancy tests:
   a. latex agglutination
   b. monoclonal antibody (ELISA) test

60. List at least four (4) diseases or conditions OTHER than pregnancy which may result in a positive pregnancy test.

61. State the causative agent of Lyme’s Disease.

62. Name the vector responsible for transmission of Lyme’s disease.

63. How long must the vector remain attached for transmission of the agent of Lyme’s disease to occur?
64. List and describe three stages of Lyme’s Disease.

65. List the three types of tests commonly performed tests to assist in the diagnosis of Lyme’s disease. Which one is most sensitive?

66. State the clinical significance of haptoglobin?

67. State the normal values for haptoglobin?

68. Compare and contrast infections due to HSV1 and HSV2.

69. Briefly lists the laboratory test methods used to diagnose HSV1 and HSV2.

70. List the organisms responsible for and give a brief description of chicken pox and shingles.

71. List the laboratory tests utilized to detect infections due to chicken pox and shingles.

72. State the disease caused by the Rubella virus and list the symptoms of the disease.

73. Describe the condition known as “congenital rubella”.
Serology Review Questions

74. List 3 laboratory methodologies utilized to detect rubella antibodies.

75. State the disease caused by the rubeola virus and list the symptoms of the disease.

76. In testing for rubeola what antibody class is most frequently looked for? Why?

77. List three methodologies utilized to detect rubeola antibodies.

78. List the signs and symptoms of mumps.

79. State the significance of IgM and IgG antibody titers during a mumps infection.

80. State the route of transmission for the five types of hepatitis viruses.

81. Which hepatitis virus requires an infection with Hepatitis B in order for infection to occur?

82. State the significance of presence of IgM versus IgG class hepatitis antibodies in determining the status of the infection of someone with hepatitis.
83. For hepatitis B, list three markers used for diagnosis and the significance of each one.

84. State the etiologic agent of Acquired Immunodeficiency Syndrome (AIDS).

85. List the three main structural genes of HIV.

86. State 4 methods of transmission of HIV.

87. List and describe the stages of an HIV infection INCLUDING pertinent laboratory results of each, ie, antibody presence, CD4 count, etc.