Physiology — Blood & Lymphatic System (100 Short Questions with Answers)

1. What are the main functions of blood?
   Answer: Transport, regulation of temperature and pH, and protection against infection.
2. What is the average blood volume in an adult?
   Answer: Around 5 liters.
3. What is plasma made of?
   Answer: Water, proteins, electrolytes, nutrients, and waste products.
4. What is the normal lifespan of a red blood cell?
   Answer: About 120 days.
5. Where are red blood cells destroyed?
   Answer: In the spleen and liver.
6. What gives red blood cells their color?
   Answer: Hemoglobin.
7. What is the shape of a normal red blood cell?
   Answer: Biconcave disc.
8. What is hematopoiesis?
   Answer: The process of forming blood cells in the bone marrow.
9. Which hormone controls erythropoiesis?
   Answer: Erythropoietin.
10. Where is erythropoietin produced?
    Answer: In the kidneys.
11. What is the main function of white blood cells?
    Answer: Defense against infections.
12. Which WBCs are responsible for phagocytosis?
    Answer: Neutrophils and monocytes.
13. What causes anemia?
    Answer: Low RBC count or low hemoglobin level.
14. What is iron deficiency anemia?
    Answer: Anemia caused by lack of iron for hemoglobin synthesis.
15. What is the function of platelets?
    Answer: Blood clotting.
16. What vitamin is essential for normal blood clotting?
    Answer: Vitamin K.
17. What are the major plasma proteins?
    Answer: Albumin, globulins, and fibrinogen.
18. Which plasma protein maintains osmotic pressure?
    Answer: Albumin.
19. What is leukocytosis?
    Answer: An increased number of white blood cells.
20. What is leukopenia?

Answer: A decreased number of white blood cells.

21. What is hematocrit?
Answer: The percentage of red blood cells in total blood volume.

22. What is the normal hematocrit value for men?
Answer: Around 45%.

23. What is the normal hematocrit value for women?
Answer: Around 40%.

24. What vitamin is needed for red blood cell maturation?
Answer: Vitamin B12 and folic acid.

25. What is megaloblastic anemia?
Answer: Anemia due to vitamin B12 or folate deficiency causing large RBCs.

26. What is hemolytic anemia?
Answer: Anemia caused by increased destruction of red blood cells.

27. What is aplastic anemia?
Answer: Failure of bone marrow to produce enough blood cells.

28. What is polycythemia?
Answer: Abnormally high number of red blood cells.

29. What are reticulocytes?
Answer: Immature red blood cells released from bone marrow.

30. What is the function of hemoglobin?
Answer: To carry oxygen and carbon dioxide.

31. What metal is necessary for hemoglobin synthesis?
Answer: Iron.

32. What is the function of neutrophils?
Answer: To engulf and destroy bacteria.

33. Which WBC increases in parasitic infection?
Answer: Eosinophils.

34. Which WBC increases in allergic reactions?
Answer: Basophils.

35. What chemical do basophils release?
Answer: Histamine and heparin.

36. Which WBC becomes a macrophage in tissues?
Answer: Monocyte.

37. What are the two types of lymphocytes?
Answer: B lymphocytes and T lymphocytes.

38. What do B lymphocytes produce?
Answer: Antibodies.

39. What is the role of T lymphocytes?
Answer: To kill infected or abnormal cells.

40. What is immunity?
Answer: The ability of the body to resist infections.

41. What is innate immunity?
Answer: The natural defense present from birth.

42. What is adaptive immunity?
Answer: The acquired defense after exposure to antigens.

43. What are antigens?
Answer: Foreign substances that trigger immune response.

44. What are antibodies?
Answer: Proteins made by B cells that bind specific antigens.

45. What is the function of IgG antibody?
Answer: Provides long-term immunity and crosses the placenta.

46. Which antibody is involved in allergic reactions?
Answer: IgE.

47. What is the role of IgM?
Answer: It is the first antibody produced during an infection.

48. What is the function of IgA?
Answer: Provides mucosal immunity in saliva, tears, and milk.

49. What is hypersensitivity?
Answer: An exaggerated immune response to harmless substances.

50. What is an allergen?
Answer: A substance that causes an allergic reaction.

51. What happens during an allergic reaction?
Answer: Histamine is released causing inflammation and swelling.

52. What is anaphylaxis?
Answer: A severe and potentially fatal allergic reaction.

53. What is the function of the lymphatic system?
Answer: To return excess tissue fluid to the bloodstream and defend against infection.

54. What is lymph?
Answer: The clear fluid that circulates in lymphatic vessels.

55. What are lymph nodes?
Answer: Small organs that filter lymph and contain immune cells.

56. What is the spleen’s main function?
Answer: To filter blood and remove old red blood cells.

57. What is the thymus responsible for?
Answer: Maturation of T lymphocytes.

58. What are natural killer (NK) cells?
Answer: Lymphocytes that kill virus-infected and cancer cells.

59. What is inflammation?
Answer: A protective response to tissue injury causing redness, heat, swelling, and pain.

60. What are cytokines?
Answer: Signaling proteins that regulate immune responses.

61. What is phagocytosis?
Answer: The process by which cells engulf and digest particles or microbes.

62. Which cells perform phagocytosis?
Answer: Neutrophils and macrophages.

63. What is the first line of defense in immunity?

Answer: Physical and chemical barriers like skin and mucous membranes.

64. What is the second line of defense?
Answer: Innate immune cells like phagocytes, NK cells, and inflammation.

65. What is the third line of defense?
Answer: Specific adaptive immune responses involving T and B cells.

66. What is the lifespan of platelets?
Answer: Around 7 to 10 days.

67. Where are platelets produced?
Answer: In the bone marrow from megakaryocytes.

68. What is thrombocytopenia?
Answer: A condition of low platelet count.

69. What is thrombocytosis?
Answer: A condition of increased platelet count.

70. What is coagulation?
Answer: The process of blood clot formation.

71. Which ion is essential for blood clotting?
Answer: Calcium (Ca^{2+}).

72. What is fibrin?
Answer: An insoluble protein that forms the framework of a blood clot.

73. What enzyme converts fibrinogen to fibrin?
Answer: Thrombin.

74. What prevents blood clotting in healthy vessels?
Answer: Smooth endothelium and anticoagulant substances like heparin.

75. What is hemophilia?
Answer: A genetic disorder causing defective blood clotting.

76. What is the universal donor blood type?
Answer: Type O negative.

77. What is the universal recipient blood type?
Answer: Type AB positive.

78. What determines blood type?
Answer: The presence or absence of specific antigens on RBC membranes.

79. What is the Rh factor?
Answer: A protein antigen (D antigen) on red blood cells.

80. What happens in Rh incompatibility?
Answer: Mother’s antibodies attack the fetus’s Rh-positive red cells.

81. What is plasma without clotting factors called?
Answer: Serum.

82. What is erythroblastosis fetalis?
Answer: A hemolytic disease in newborns due to Rh incompatibility.

83. What are the symptoms of anemia?
Answer: Fatigue, pale skin, and shortness of breath.

84. How does the body respond to low oxygen levels?
Answer: By releasing more erythropoietin to increase RBC production.

85. What is the function of macrophages?
Answer: Engulf pathogens and present antigens to lymphocytes.

86. What is active immunity?
Answer: Immunity developed after infection or vaccination.

87. What is passive immunity?
Answer: Immunity transferred from another source, like maternal antibodies.

88. How do vaccines work?
Answer: They introduce antigens to stimulate immune memory without causing disease.

89. What is autoimmunity?
Answer: A condition where the immune system attacks the body's own cells.

90. Give one example of an autoimmune disease.
Answer: Rheumatoid arthritis or type 1 diabetes.

91. What is the main function of the spleen in immunity?
Answer: Filters blood and activates immune responses to antigens.

92. What is the lymphatic system's role in fat absorption?
Answer: It absorbs fats from the intestine via lacteals.

93. What are lymph capillaries?
Answer: Tiny vessels that collect lymph from tissues.

94. Where does lymph return to the bloodstream?
Answer: At the subclavian veins.

95. What is edema?
Answer: Accumulation of fluid in tissues due to poor lymph drainage.

96. What is the main function of histamine?
Answer: Causes vasodilation and increases capillary permeability.

97. What is complement system?
Answer: A group of plasma proteins that enhance immune responses.

98. What is opsonization?
Answer: Coating of microbes with antibodies to promote phagocytosis.

99. What is immunological memory?
Answer: The ability of the immune system to respond faster upon re-exposure.

100. What is homeostasis of blood?
Answer: Maintaining stable internal conditions like pH, volume, and temperature.

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