

Blood and Lymph Review Questions

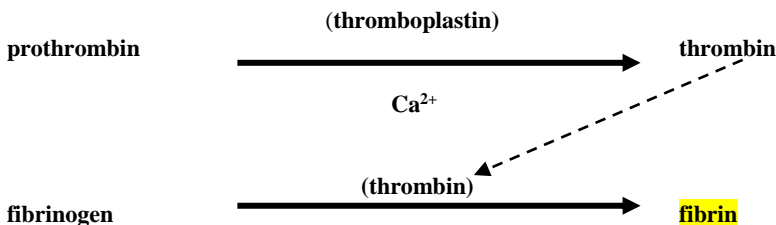
KEY

1. Blood consists of what 4 major parts?
Blood is made of : plasma, red blood cells, white blood cells, and platelets.
2. Describe blood plasma.
Plasma is a clear yellowish liquid.
3. What percentage of plasma is water?
91% of plasma is water.
4. List the 6 typical components of plasma.
Plasma is made of : proteins, inorganic salts, nutritive materials absorbed from the digestive system, hormones, vitamins, enzymes and waste products of cellular activity.
5. Explain the three groups of blood proteins?
albumins – establish osmotic pressure that draws water back into capillaries which helps maintain body fluid levels.
globulins – produce antibodies that provide protection against invading microbes.
fibrinogens – important in blood clotting.
6. Give 2 characteristics of red blood cells.
Red blood cells (erythrocytes) lack a nucleus and are not capable of reproduction. They have a biconcave shape.
7. What is the primary function of red blood cells?
Red blood cells transport gases (oxygen) around the body.
8. What is erythropoiesis?
The process of manufacturing red blood cells.
9. What is the name of the protein, which carries oxygen?
Hemoglobin is the protein complex that carries oxygen.
10. Why is blood red?
Blood is red because of the iron in the hemoglobin reflects red light when its carrying oxygen.
11. Approximately how long do red blood cells live?
Red blood cells live for approximately 110-120 days.
12. Where do worn out red blood cells decompose?
The liver.
13. Where are red blood cells made?
Red blood cells are made in the bone marrow.
14. Explain blood anemia.
A condition which drastically decreases the oxygen carrying capability of the blood. Low levels of hemoglobin in the blood caused by low levels of iron in diet can result in decrease in manufacturing rate of red blood cells.
15. Explain carbon monoxide poisoning.
Carbon monoxide forms a stable bond with hemoglobin and "competes" with the oxygen for hemoglobin. Therefore if you breath in carbon monoxide the oxygen carrying ability of your red blood cells will be rapidly degraded to a point at which asphyxiation (suffocation) results.
16. Describe white blood cells.
White blood cells have a nucleus, are amoeba like, have no hemoglobin, are colourless, and engulf/destroy invading bacteria and other particles.
17. What are the two classifications of leukocytes?
1. Granulocytes – contain small cytoplasmic granules. (produced in bone marrow)
2. Agranulocytes – do not contain small cytoplasmic granules. (produced in bone marrow and modified in lymph nodes)
18. What are the two functions of leukocytes?
i) engulf and destroy invading bacteria and other foreign particles
ii) form special proteins, called antibodies, which interfere with foreign invading microbes and toxins
19. Where are white blood cells made?
White blood cells are made in the bone marrow.
20. When is your white blood cell count high? Why does it get high?
Your white blood cell count gets high when you become sick with some type of bacteria or foreign presence in the blood. The white blood cells build up in preparation to fight off the foreign bodies.
21. Describe platelets.
Platelets are the smallest solid particle in the blood. They are fragments of other cells, colourless and spherical in shape. They live for about 4 days. They also do not have a nucleus.
22. What is the role platelets play in our blood?
Platelets aid in the formation of a clot.
23. Where are platelets made?
Platelets are made in the bone marrow.
24. A blood clot forms when strands of a sticky insoluble protein trap blood cells at the location of a damaged or broken blood vessel. What is the insoluble protein?
Fibrin
25. Describe the difference between blood types (A,B,AB,O) with respect to the antigen found and the antibodies in the blood.
Type A blood has antigen marker A and antibody B.
Type B blood has antigen marker B and antibody A.
Type AB blood has antigen marker A and B and no antibody.
Type O blood has no antigen markers and antibody A&B.




26. Create and fill in a chart like the one below.

Blood Type	Can donate to:	Can receive from:
A	A,AB	A,O
B	B,AB	B,O
AB	AB	A,B,AB,O
O	A,B,AB,O	O
A ⁺	A ⁺ ,AB ⁺	A ⁺ ,A ⁻ ,O ⁺ ,O ⁻
A ⁻	A ⁺ ,A ⁻ ,AB ⁺ ,AB ⁻	A ⁻ ,O ⁻
B ⁺	B ⁺ ,AB ⁺	B ⁺ ,B ⁻ ,O ⁺ ,O ⁻
B ⁻	B ⁺ ,B ⁻ ,AB ⁺ ,AB ⁻	B ⁻ ,O ⁻
AB ⁺	AB ⁺	All (Universal Recipient)
AB ⁻	AB ⁺ ,AB ⁻	A ⁻ ,B ⁻ ,AB ⁻ ,O ⁻ (all Rh neg.)
O ⁺	A ⁺ ,B ⁺ ,AB ⁺ ,O ⁺ (all Rh pos.)	O ⁺ ,O ⁻
O ⁻	All (Universal Donor)	O ⁻


27. What blood type is a universal donor? Universal receiver?
universal donor O neg
universal receiver AB pos
28. Describe what happens if someone receives incompatible blood.
the recipients blood cells will clump up (agglutinate) killing the recipient
29. Explain Rh factor in terms of donor compatibility.
An Rh + individual can't give blood to an Rh - individual, but an Rh - individual can give blood to either an Rh - or an Rh + individual.
30. Explain erythroblastosis fetalis.
If a baby is Rh+ and the mother is Rh-, due to blood exchange during birthing the mother is exposed to the Rh+ factor. Her immune system produces antibodies for them. If the subsequent child is also Rh+ some of the antibodies still in the mothers blood are likely to move across the placenta into the baby's blood causing it to clump restricting blood flow turning the baby blue.
31. Compare the three methods in which complimentary proteins defend against the microbes.
i) dissolves the membrane of the invader.
ii) attracts a phagocyte (engulfers).
iii) forms protective coating around invader.
32. Explain how helper T cells, B cells and killer T cells work together to fight off invading microbes.
helper T cells identify intruders by their antigen markers, B cells receive the information from the helper T cells and produce antibodies, killer T cells also receive the information from the helper T cells and they seek out and destroy intruders by rupturing their membranes
33. Describe how an antibody neutralizes an invading microbe.
antibodies attach to invading microbes making them to large to enter cells and easier to find by macrophages
34. Describe the lymphatic system.
The lymphatic system creates a constant flow of "tissue fluid" from the blood stream into the cavities between the tissues, cells, and back to the blood.
35. Describe lymph.
Lymph is the "tissue fluid" similar to blood plasma.
36. Describe lymph nodes.
Lymph nodes filter out and digest bacteria and other fragments of foreign material picked up by the lymph when it is between the tissue.
37. Where are lymph nodes found in the body?
Lymph nodes are found near the body's major organs - in the neck, under the arms, and also in the limbs.
38. What are the 2 main functions of the lymphatic system?
1. Creates a constant flow of "tissue fluid" from the blood stream into the cavities between the tissues, cells, and back to the blood.
2. Produce certain white blood cells.
39. Describe the pathway for blood clot formation.

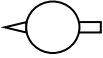



40. Given the following:


-  = A antigen
-  = B antigen
-  = Rh antigen

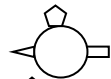
Draw red blood cells to represent each of the following:


a) B+ 


b) AB- 


c) O- 

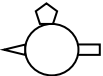
d) A+ 


e) AB+ 

f) O+ 

g) B-. List who can give to B-.  B-, O-

h) A-. List who A- can give to.  A+, A-, AB+, AB-

i) draw the universal recipient. 

j) draw the universal donor. 

k) draw what it would look like if A+ blood were given to a B+ person. Include both blood cell types and antibody.

