**Blood Unit Study Questions Answer Key**

1. What is blood plasma?

It is the liquid component of blood.

1. List 3 things found in blood plasma.

Water, salts, nutrients, hormones, antibodies, cellular waste.

1. Your blood is what percent plasma and what percent cells?

55% plasma, 45% cells.

1. What is the main function of red blood cells?

Red blood cells bind and transport oxygen throughout the body.

1. Name the molecule inside red blood cells that binds oxygen.

Hemoglobin.

1. Name the 5 different types of white blood cells in order of abundance.
   1. Neutrophils
   2. Lymphocytes
   3. Monocytes
   4. Eosinophils
   5. Basophils
2. What is the main function of each type of white blood cell?
   1. Neutrophils: Phagocytosis. Eat/engulf pathogens.
   2. Lymphocytes: B cells make antibodies. T cells attack virus-infected cells.
   3. Monocytes: Become macrophages – “big eaters.” Long-term clean-up crew.
   4. Eosinophils: Attack parasites. Also increase during allergy attacks.
   5. Basophils: Release histamine which causes inflammation.
3. What is the main function of platelets?

To initiate the formation of a blood clot.

1. Name the stem cell found in red bone marrow that produces blood cells.

Hemocytoblast stem cells.

1. Do red blood cells need to be replaced regularly? Why?

Yes, they have no nucleus when mature. RBCs only live 100-120 days.

1. Name the signal that stimulates red blood cell production.

EPO

1. Describe a situation that would cause your bone marrow to make more red blood cells.

Low blood oxygen level due to high altitude, for example.

Or low red blood cell count due to blood loss, for example.

1. Describe a situation that would cause your bone marrow to make more white blood cells.

Your bone marrow will make more white blood cells when you are fighting an infection.

1. List and describe the four steps to form a blood clot.

Step 1: Platelet plug. Platelets stick and clump around the broken blood vessel opening.

Step 2: Vasoconstriction: The injured blood vessel constricts and becomes more narrow to reduce blood flow and blood loss.

Step 3: Fibrin net formation: Your platelets activate a number of proteins in your blood in order to form a fibrin protein net within the platelet plug. The fibrin net captures blood cells, clogs, and stops the loss of blood.

Step 4: Tissue healing and repair. The cells of the damaged skin and blood vessels will slowly repair themselves over the course of 7-10 days. The blood clot becomes a scab and falls off.

1. Clot formation is a highly regulated process. Why?

You want your blood to be liquid. You don’t want clots to form when you don’t need them.

1. You blood-type someone in the lab and see that anti-A antibodies attack the blood sample and anti-Rh antibodies attack the blood sample. What is the person’s blood type? A+
2. Someone who is B+ can receive what blood types? Why?

Can receive B+, B-, O+, O-. A person with B+ blood will have anti-A antibodies, so you can’t give them any blood with A like A+, A-, AB+, or AB-.

1. Someone who is O- can donate to what blood types? Why?

Someone who is O- can give their blood cells to anyone (universal donor), because their blood cells don’t have A, B, or Rh proteins on them.

1. One parent is AB+ and the other is O-. What blood types could their children have? Show the punnett square(s).

AB x OO; RR x rr or Rr x rr. Children could be A+, B+ if the parent is homozygous RR. Or the children could also be A+, B+, A-, B- if the parent is heterozygous Rr.

1. Is it possible for parents who are A- and B- to have a child that’s B-? Show the punnett square(s).

Yes, it is possible if the parent who has A blood is heterozygous AO.