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PHYSIOLOGY ASSIGNMENT

RADIOLOGY 2ND SEMESTER

SECTION A

Q1: What is blood? Explain composition and function of blood.

ANS: BLOOD

Blood is a body fluid in humans and other animals that delivers necessary substances such as nutrients and oxygen to the cells and transport metabolic waste products from those same cells.

Its latin name is haema.

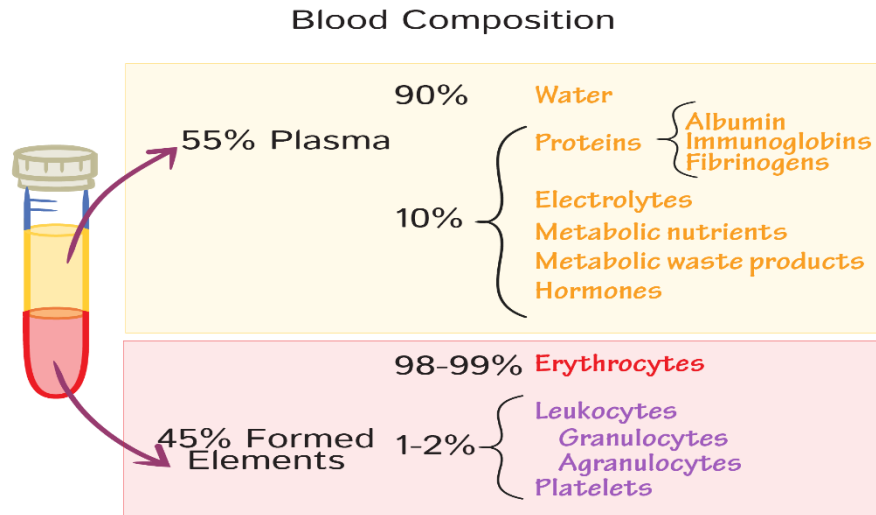


- **COMPOSITION:**
Blood is composed of four main components:
 1. Plasma
 2. Red blood cells(erythrocytes)
 3. White blood cells(leukocytes)
 4. Platelets(thrombocytes)
- **PLASMA:** About 55% of blood is plasma. It contains proteins that help blood to clot.
- **RED BLOOD CELLS:** Red blood cells contain hemoglobin and distributes oxygen.

- **WHITE BLOOD CELLS:** White blood cells are a part of the body's immune system , they destroy and remove , old and aberrant cells and cellular debris.
- **PLATELETS:** They take part in blood clotting.

Other important components include:

- Serum albumin
- Blood clotting factors
- Immunoglobulins(antibodies)



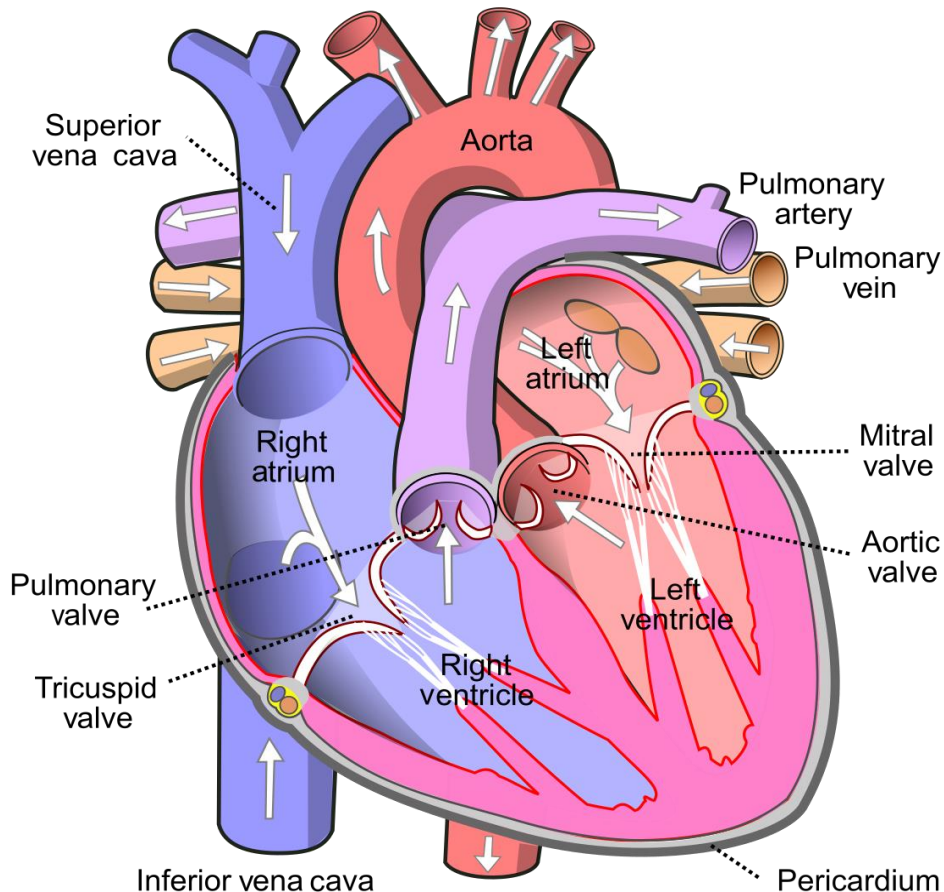
- **FUNCTIONS OF BLOOD:** Blood performs many important functions in the body including
 1. Supply of oxygen to tissues.
 2. Supply of nutrients such as glucose, amino acid and fatty acid.
 3. Removal of wastes such as carbon dioxide, urea and lactic acid.
 4. Messenger functions including the transport of hormones and the signaling of tissue damage.
 5. Hydraulic functions.
 6. Regulation of core body temperature.

Q2: Explain physiology of cardiovascular system.

Ans: Cardio= Heart, vascular = vessels

Blood is circulated around the body through blood vessels by the pumping action of the heart. In humans, the right atrium receives the deoxygenated blood through vena cava(largest vein) from the whole body. This happens when the heart relaxes and space is produced inside the atrium. The blood is forced to right ventricle through tricuspid valve. When the heart contracts

the deoxygenated blood from the right ventricle is pumped to the lungs, through pulmonary arteries. During this the tricuspid valve is kept closed preventing the back flow. After oxygenation the blood comes back to left atrium through pulmonary vein. From here through bicuspid valve oxygenated blood is sent to the left ventricle. On contraction the oxygenated blood is pushed with full force into aorta (the largest artery) which distributes it to whole body through smaller and smaller arteries.



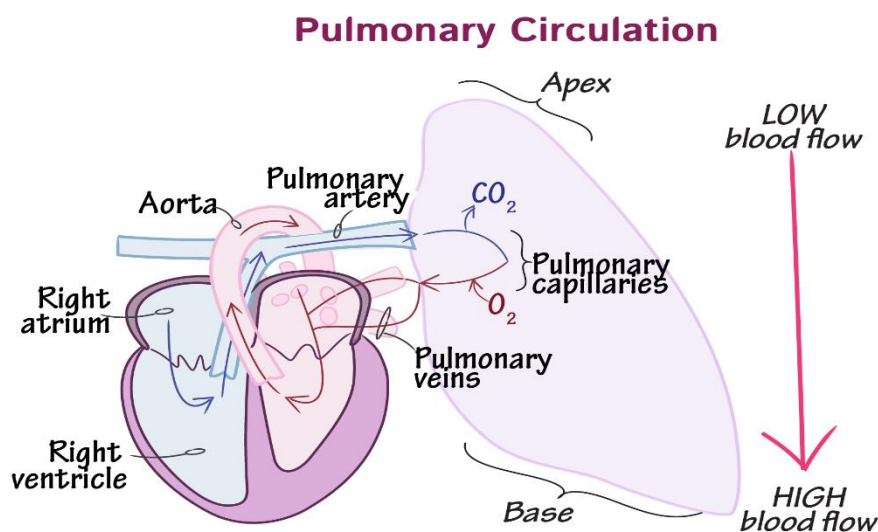
Q3: Explain the physiology of pulmonary system circulation.

Ans : PULMONARY SYSTEM CIRCULATION

Pulmonary system circulation includes a vast network of arteries, veins and lymphocytes that function to exchange blood and other tissue fluids between the heart, the lungs and back. They are designed to perform certain specific functions that are unique to the pulmonary circulation, such as ventilation and gas exchange.

The system can be divided into following components:

- The arterial circuit arises from the main pulmonary artery arising from the right ventricle and runs a course of only 5cm before dividing into right and left main branches and many subsequent branches to form an extensive network of small arteries, arterioles and capillaries. The pulmonary artery are thinner and have a large diameter.
- The venous circuit begins with the venules that drain the capillaries. They join to forms smaller veins and eventually merge to form the main pulmonary veins drainage into left atrium. The veins are thinner and accommodate more blood because of their larger compliance.
- Lymphatics play a crucial role in maintaining a dry alveolar membrane and preventing accumulation of tissue fluid around the pulmonary circulation. They can be found close to the terminal bronchioles.



- Function: The pulmonary circulation has many essential functions.
 1. Its primary function involves the exchange of gases across the alveolar membrane.
 2. The bronchial circulation provides oxygenated blood to the lung parenchyma.
 3. The low pressure venous system and an intricate system of lymphatics ensure that there is no buildup of edema fluid in healthy lungs.

THE END