VISWASS SCHOOL & COLLEGE OF NURSING

GNM 1ST YEAR

ANATOMY & PHYSIOLOGY

UNIT-1

INTRODUCTION TO ANATOMICAL TERMS ORGANISATION OF HUMAN BODY

SHORT QUESTIONS AND ANSWERS

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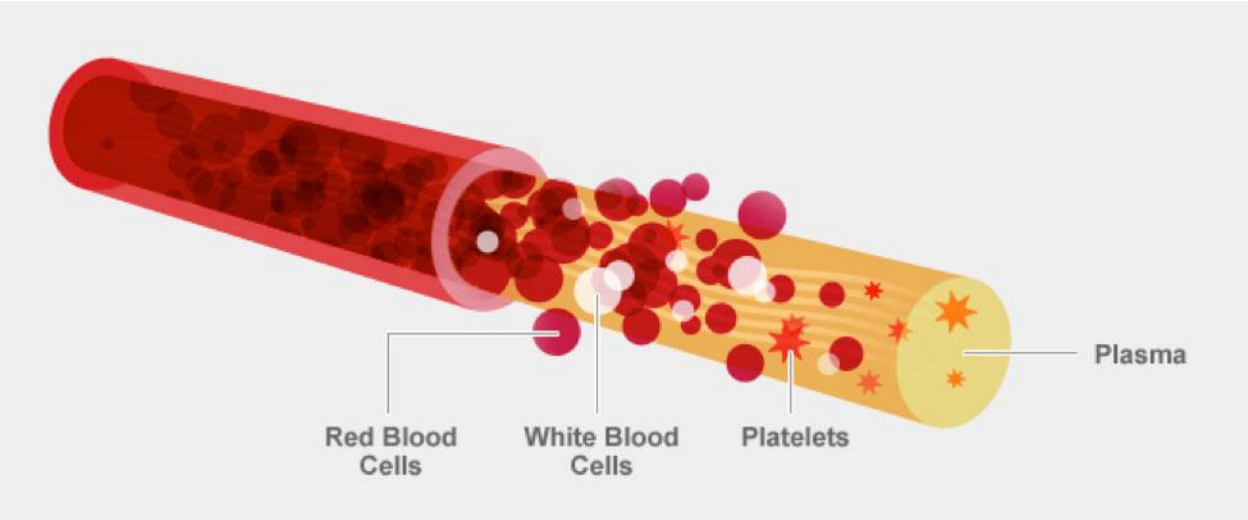
1. **Explain the all transport systems of the human body.(5)**

Transport systems:

Blood:

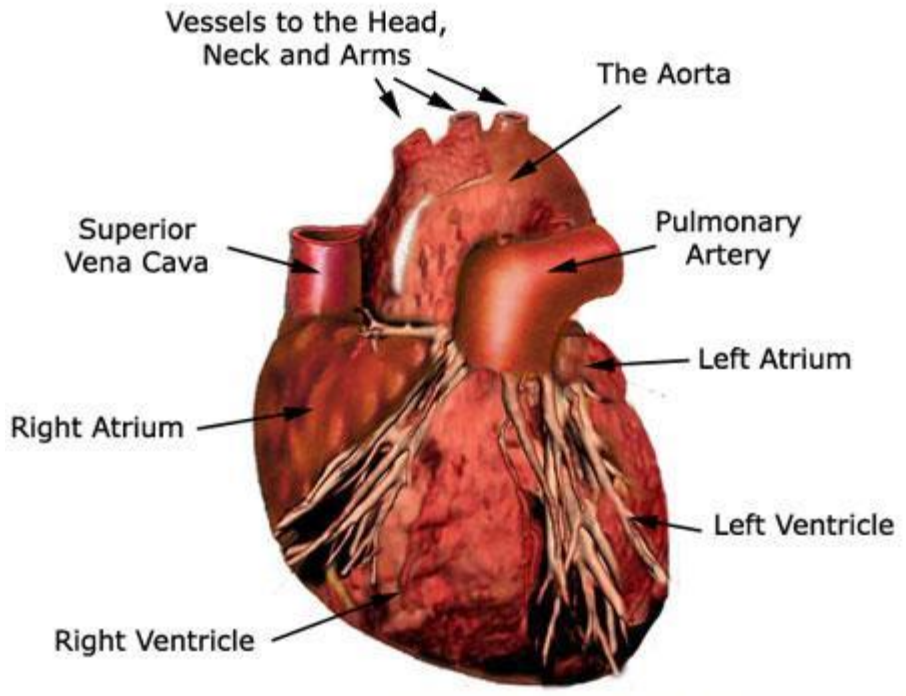
- Blood is a body fluid in humans and other animals that delivers necessary substances such as nutrients and oxygen to the cells and transports metabolic waste products away from those same cells.
- In vertebrates, it is composed of blood cells suspended in blood plasma. Plasma, which constitutes 55% of blood fluid, is mostly water (92% by volume), and contains proteins, glucose, mineral ions, hormones, carbon dioxide (plasma being the main medium for excretory product transportation), and blood cells themselves.
- Albumin is the main protein in plasma, and it functions to regulate the colloidal osmotic pressure of blood.
- The blood cells are mainly red blood cells (also called RBCs or erythrocytes), white blood cells (also called WBCs or leukocytes) and platelets (also called thrombocytes).
- The most abundant cells in vertebrate blood are red blood cells. These contain hemoglobin, an iron-containing protein, which facilitates oxygen transport by reversibly binding to this respiratory gas and greatly increasing its solubility in blood.

- In contrast, carbon dioxide is mostly transported extracellularly as bicarbonate ion transported in plasma.
- Blood is circulated around the body through blood vessels by the pumping action of the heart.
- with lungs, arterial blood carries oxygen from inhaled air to the tissues of the body, and venous blood carries carbon dioxide, a waste product of metabolism produced by cells, from the tissues to the lungs to be exhaled



Cardiovascular system:

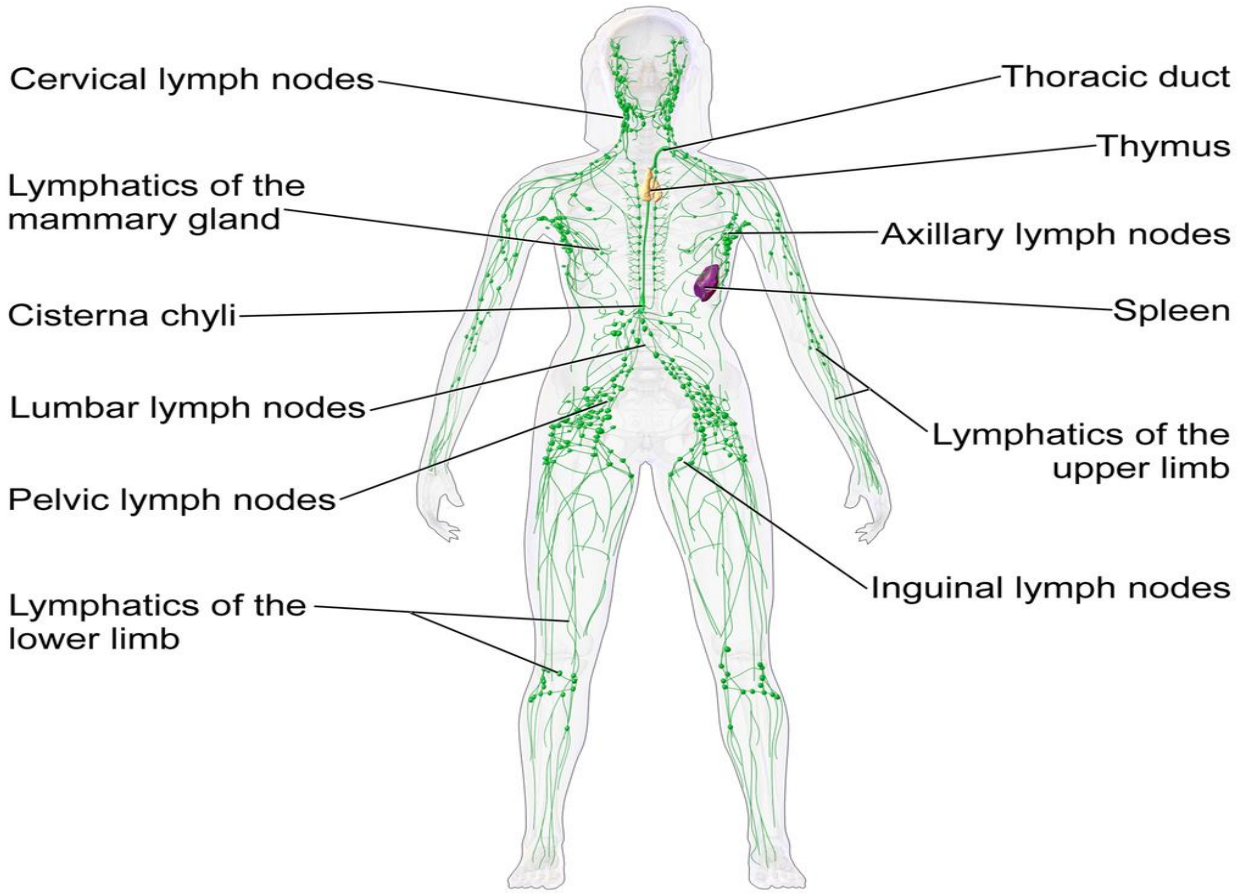
- The cardiovascular system can be thought of as the transport system of the body.
- This system has three main components: the heart, the blood vessel and the blood itself. The heart is the system's pump and the blood vessels are like the delivery routes.
- Blood can be thought of as a fluid which contains the oxygen and nutrients the body needs and carries the wastes which need to be removed.



- The main function of the cardiovascular system is therefore to maintain blood flow to all parts of the body, to allow it to survive.
- Veins deliver used blood from the body back to the heart. Blood in the veins is low in oxygen (as it has been taken out by the body) and high in carbon dioxide (as the body has unloaded it back into the blood).
- All the veins drain into the superior and inferior vena cava which then drain into the right atrium.
- The right atrium pumps blood into the right ventricle. Then the right ventricle pumps blood to the pulmonary trunk, through the pulmonary arteries and into the lungs.
- In the lungs the blood picks up oxygen that we breathe in and gets rid of carbon dioxide, which we breathe out. The blood is becomes rich in oxygen which the body can use.
- From the lungs, blood drains into the left atrium and is then pumped into the left ventricle. The left ventricle then pumps this oxygen-rich blood out into the aorta which then distributes it to the rest of the body through other arteries.

Lymphatic system:

- The lymphatic system, or lymphoid system, is an organ system in vertebrates that is part of the circulatory system and the immune system. It is made up of a large network of lymphatic vessels, lymphatic or lymphoid organs, and lymphoid tissues.
- The vessels carry a clear fluid called lymph (the Latin word lympha refers to the deity of fresh water, "Lympha") towards the heart.
- Unlike the circulatory system, the lymphatic system is not a closed system.
- The human circulatory system processes an average of 20 litres of blood per day through capillary filtration, which removes plasma from the blood.
- Roughly 17 litres of the filtered plasma is reabsorbed directly into the blood vessels, while the remaining three litres remain in the interstitial fluid.
- One of the main functions of the lymphatic system is to provide an accessory return route to the blood for the surplus three litres.
- The other main function is that of immune defense. Lymph is very similar to blood plasma, in that it contains waste products and cellular debris, together with bacteria and proteins.
- The cells of the lymph are mostly lymphocytes. Associated lymphoid organs are composed of lymphoid tissue, and are the sites either of lymphocyte production or of lymphocyte activation.
- These include the lymph nodes (where the highest lymphocyte concentration is found), the spleen, the thymus, and the tonsils. Lymphocytes are initially generated in the bone marrow.
- The lymphoid organs also contain other types of cells such as stromal cells for support. Lymphoid tissue is also associated with mucosas such as mucosa-associated lymphoid tissue (MALT).



2. **Write the Anatomical terms.(5)**

The anatomical position:

The position is used in all anatomical description to ensure accuracy and consistency.

The body is in the upright position with the head facing forward, the arms at the sides with the palms of the hands facing forward, and the feet together.

Directional terms:

These paired terms are used to describe the location of body parts in relation to others.

Regional terms:

These are used to describe part of the body.

Body planes:

There are three body planes, which lie at right angles to each other. These divides the body into sections and are used to visualise or describe its internal arrangement from different perspectives. The anatomical positions is used as the reference position in descriptions using body planes.

Median plane: when the body is divides longitudinally through the midline into right and left halves, it has been divided in the median plane.

Frontal plane: a coronal or frontal section divides the body longitudinally into its anterior(front) and posterior(back) sections.

Transverse plane: a transverse or horizontal section provides a cross-section dividing the body or body part into upper and lower parts. This may be at any level.