**Grand Assignment**

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**Class: Rad 2nd semester section A**

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**Q1:** What is blood? Explain Composition and Function of Blood.

**Ans:**

**Blood definition:** Blood is a body fluid n humans and other animals that delivers necessary substances such as nutrients and oxygen to the cells and transport metabolic waste products away from those same cell. In vertebrates, it is composed of blood cells suspended in blood plasma.

**Composition of Blood:**

* Blood is the body’s only fluid tissue.
* Blood is composed of liquid plasma and formed elements.
* Formed elements include; Erythrocytes, or red blood cells (RBCs)
* Leukocyte, or white blood cells (WBCs)
* Platelets
* Hematocrit- The percentage of RBCs out of the total blood volume.

**Function of Blood:**

* Supply of oxygen to tissue (bound the Hemoglobin, which carried red blood cell.
* Supply of nutrients such as glucose, amino acids and fatty acids (dissolved in the blood or bound to plasma proteins)
* Removel of waste such as carbon dioxide, urea and lactic acid.
* Immunological function, including circulation of white blood cells, and detection of foreign material of antibodies.

**Q 2:** Explain Physiology of cardiovascular system.

**Ans: Cardiovascular System:**

* A closed system of the heart and blood vessels
* - The Heart pumps blood
* - Blood vessels allow blood to circulate to all parts of the body
* The function of the cardiovascular system is to deliver oxygen and nutrients and to remove carbon dioxide and other products.

**Components of the Cardiovascular system:**

1. **Heart =>** it is a pump composed of 4 chambers (2 atria and 2 ventricle) . The heart provides the driving force for the cardiovascular system
2. **Blood vessels =>** The blood vessels are system of tubes including;

**=** Arteries and arterioles which carry blood from the heart to all parts of the body.

**=** The arteries serve as distribution channels to the organs.

**=** Venules and veins which carry the blood back from the tissue to the heart.

**=** The veins serves as blood reservoir and collect the blood to return it to the heart.

**=** Blood capillaries which form a network of fine vessels connecting the arterioles with the Venules.

**=** The blood capillaries are the sites of exchange of gases (O2 and CO2) , nutrients and waste products between blood and tissue.

**General Functions of the CVS:**

 **=** The normal function of the CVS is to maintain homeostasis i.e

 a constant optimum internal environment). Thus in spite of continuous metabolic activities of the tissue cell. Homeostasis is maintained by continuous adequate blood flow to the tissues.

**Disorder of the cardiovascular system:**

* Cardiovascular disease ( CVD ) is the leading cause of death in western countries.
* Major cardiovascular disorders include , atherosclerosis, stroke, heart attack, aneurysm, and hypertension.

**Q3:** Explain Physiology of Pulmonary System Circulation

**Ans: Pulmonary System Circulation:**

Pulmonary circulation system is the movement of blood from the heart, to the lungs and back to the heart again.

**Pathway:**

* The blood from the body returns through the veins to the right atrium. This blood lacks oxygen and full of waste product.
* The right atrium pumps it to the right ventricle through a valve that make sure blood flows in only one direction.
* The right ventricle then pumps the blood through the pulmonary artery to the lungs.

**Physiology of pulmonary vessels:**

* The pulmonary artery extends only 5 centimetres beyond the apex of the right ventricle and then divides into right and left main branches that supply to the two respective lungs.
* The pulmonary artery is thin, with a wall thickness or third that of the aorta.
* The pulmonary arterial branches are very short. And all the pulmonary arteries, even the smaller arteries and arterioles, have larger diameter than their counterpart systematic arteries.
* This large complaince allows the pulmonary arteries to accommodate the stroke volume output of the right ventricle.
* The pulmonary veins like the pulmonary arteries are also short.

**Physiology of bronchial Vessels:**

* Small bronchial arteries that originate from the systematic circulation, amounting to about 1 to 2 percent of the total cardiac output.
* Carry oxygenated blood.
* Supplies the supporting tissue of the lungs, including the connective tissue, septa and large and small bronchial.
* After this bronchial and arterial blood has passed through the supporting tissue, it empties into the pulmonary veins and enters the left atrium, rather than passing back to the right atrium.

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