**Lec.2 Physiology Dr.Muna**

**Physiology of the circulatory system:**

The circulatory system is composed of the heart, veins, capillaries, arteries, lymphatic vessels, and lymphatic glands, which work together to supply the body tissues with nourishment and collect waste materials.

**Functions of the circulatory system:**

**1. Distribute nutrients.**

**2.**Transport and exchange oxygen and carbon dioxide.

3. Remove waste materials.

4. Prevent excessive bleeding.

**5. Prevent infection and Regulate body temperature.**

**Circulatory system:**

This system divided into two parts:

1. The cardio-vascular system.

2. Lymphatic system.

**The cardio-vascular system:**

It consists of two parts

a. Heart. b. Blood vessels.

**A. Heart:**

Is hollow muscular organ lies in the chest behind the sternum between the lungs and above the diaphragm tilted to the left side.

The heart has pyramid shape the **apex** directed downwards and the **base** upwards. The heart divided into two cavities by muscular septum. Each half has **atrium** in the upper and **ventricle** in the lower, separated from other by valves. The valves of right called the **tricuspid valves** while of the left side called the **mitral** valve (**bicuspid**).



The heart pumps the oxygenated blood to the body and the deoxygenated blood to the lungs. The blood that returns to the right atrium by superior and inferior vena cava is deoxygenated and passes to the right ventricle to be pump through the pulmonary artery to the lungs for re-oxygenation and removal of the carbon dioxide. The left atrium receives the oxygenated blood from the lunges by the pulmonary veins which pass through the left ventricle to be pump through the aorta to the different organs of the body.

**B. Blood vessels:**

There are three types of the blood vessels:

**1. Arteries.**

**2. Veins.**

**3. Capillaries.**

**1. Arteries:** There are three types according to their diameter and function into: **1. Elastic arteries:** are wide diameters, elastic wall. Example: aorta.

**2. Muscular arteries:** are intermediate diameters, muscular wall rich with muscular tissue (smooth muscle). Example: coronary artery.

**3. Arterioles:** are small diameter end in the capillary.

**2. Veins:** they are starts at the end of capillaries first type venules that attached to each other form the veins and collect with each other till end into two main veins: superior vena cava and inferior vena cava.

**Superior vena cava:** collects the blood from head, neck, and upper limb; while

**Inferior vena cava:** collects the blood from other parts of the body.

**3**. **Capillaries:** are net of the blood vessels that disturbed in different tissue which are microscopically connection between the arterioles and venules that carry the blood from the arteries pass through it then transmit to the venules.

Capillary exchange the substances between the blood and interstitial fluid of the tissue. Mainly exchanges: Oxygen, Carbon Dioxide, Glucose, Amino Acids, Hormones.

