



B.Pharm Semester 1



Human Anatomy, Physiology and Pathophysiology I

Unit 05

Cardiovascular System

PPT Notes

*Learn the Systems
That Keep Life
Moving*



HEALTHY HEARTS
BRIGHTER LIVES



CIRCULATION
FUELS LIFE



KNOWLEDGE
BUILDS A HEALTHIER
TOMORROW

*A Healthy
Heart Beats
a Brighter
Tomorrow* ♥

AORTA
CARRIES OXYGEN
RICH BLOOD

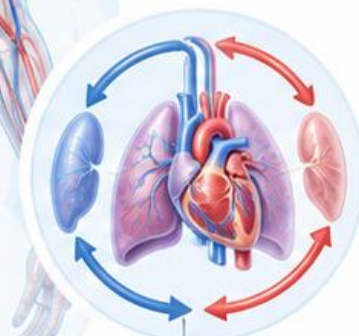
**CORONARY
ARTERIES**
SUPPLY THE
HEART MUSCLE

VEINS
BRING BLOOD
BACK TO
THE HEART

*Circulation
Connects Life
Everywhere*

SCIENCE
FOR A HEALTHIER
TOMORROW

**SYSTEMIC
CIRCULATION**
DELIVERS OXYGEN
AND NUTRIENTS
TO TISSUES



**PULMONARY
CIRCULATION**
OXYGENATES
BLOOD IN
THE LUNGS



ECG
REFLECTS
THE ELECTRICAL
ACTIVITY OF
THE HEART

Study | Understand | Apply | Grow

CARDIOVASCULAR SYSTEM OVERVIEW

1. Heart

- Muscular, four-chambered organ that pumps blood throughout the body.

2. Arteries

- Carry blood away from the heart.

3. Veins

- Carry blood towards the heart.

4. Capillaries

- Tiny, thin-walled vessels where exchange of oxygen, nutrients, hormones and waste products occurs.

5. Plasma

- Liquid part of blood that carries nutrients, hormones and waste products.

6. Blood Cells

- Red blood cells (erythrocytes) – carry oxygen.
- White blood cells (leukocytes) – help fight infections.
- Platelets (thrombocytes) – aid in blood clotting.

Together, the heart, blood vessels and blood transport materials, regulate body temperature, help fight infections, and maintain homeostasis and overall health.

HEART LOCATION AND CHAMBERS

Location in Thorax

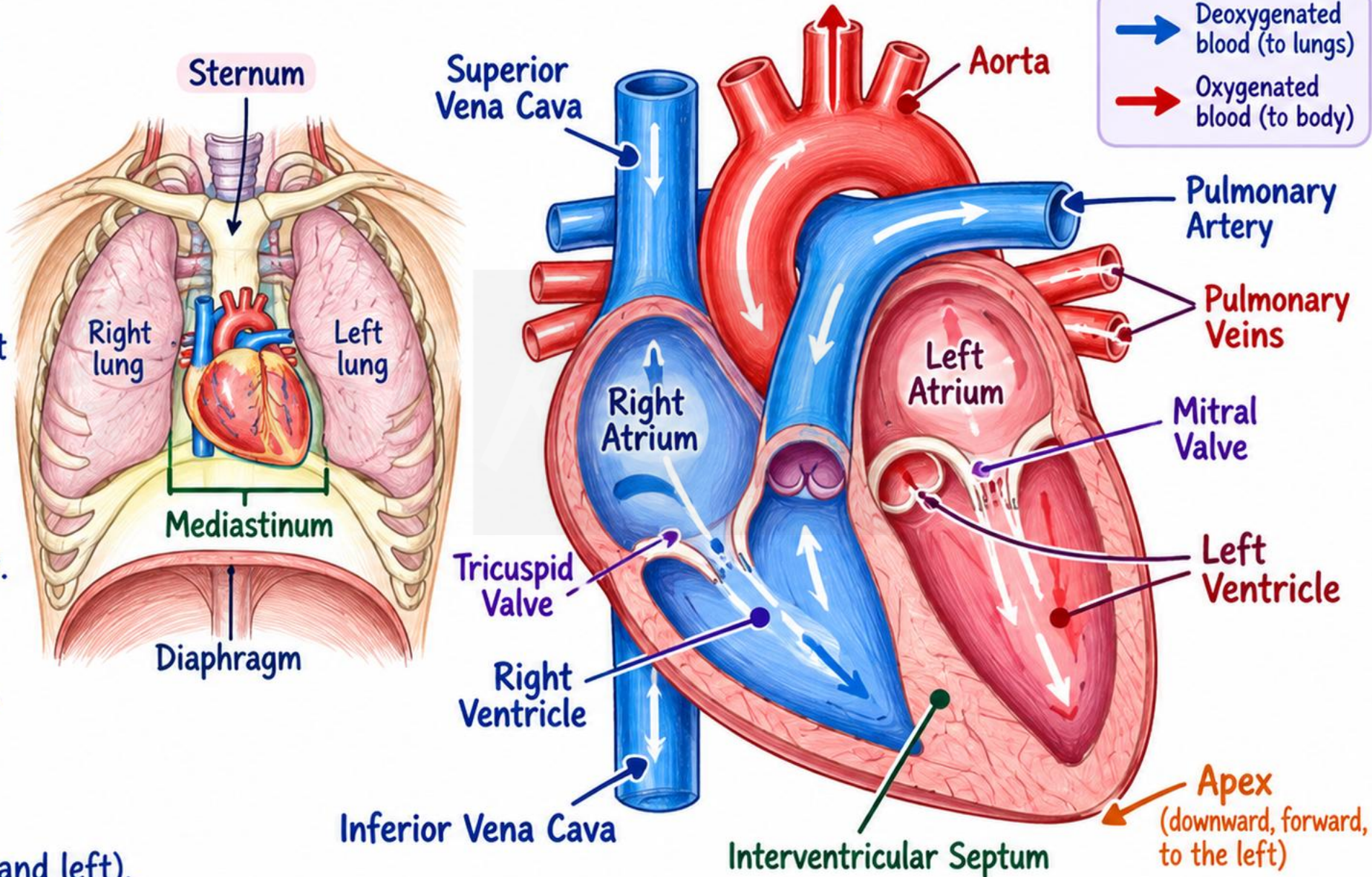
- In the mediastinum of the thoracic cavity, behind the sternum and between the lungs.
- Slightly to the left of the midline, with about two-thirds of its mass to the left of the body's midline.

Apex and Base

- **Base:** directed upward, backward and to the right.
- **Apex:** points downward, forward and to the left, resting on the diaphragm.

Four Chambers

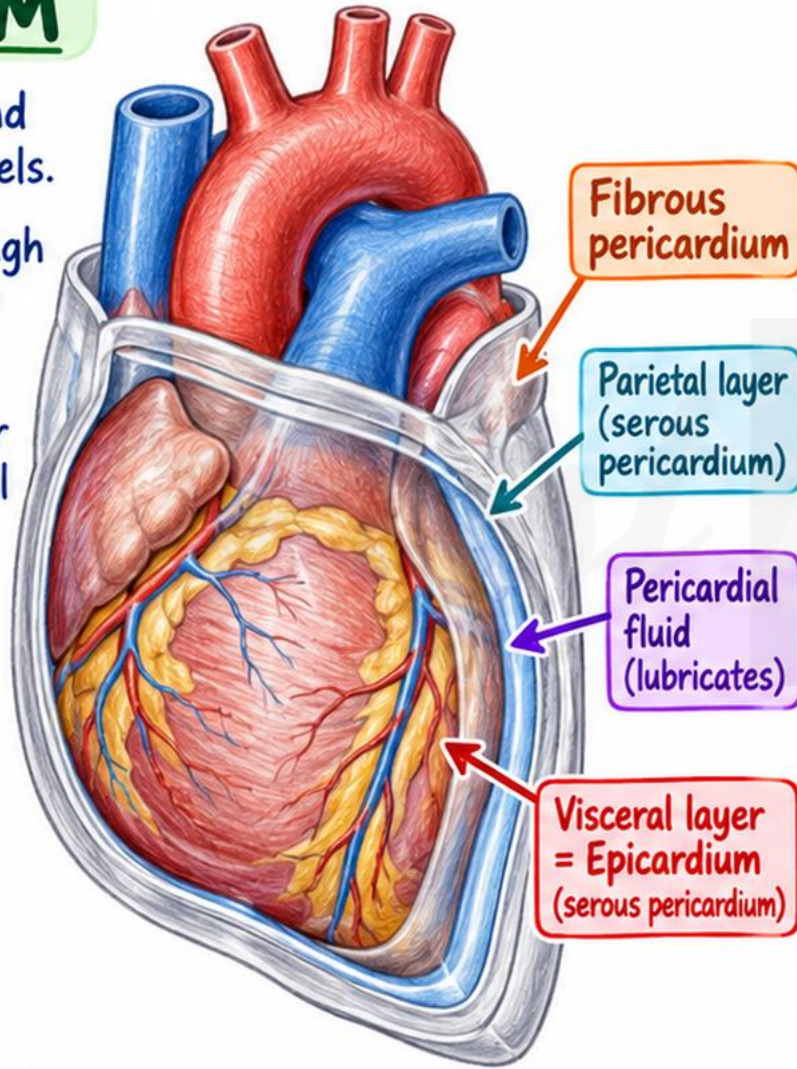
- Two atria (right and left) and two ventricles (right and left).



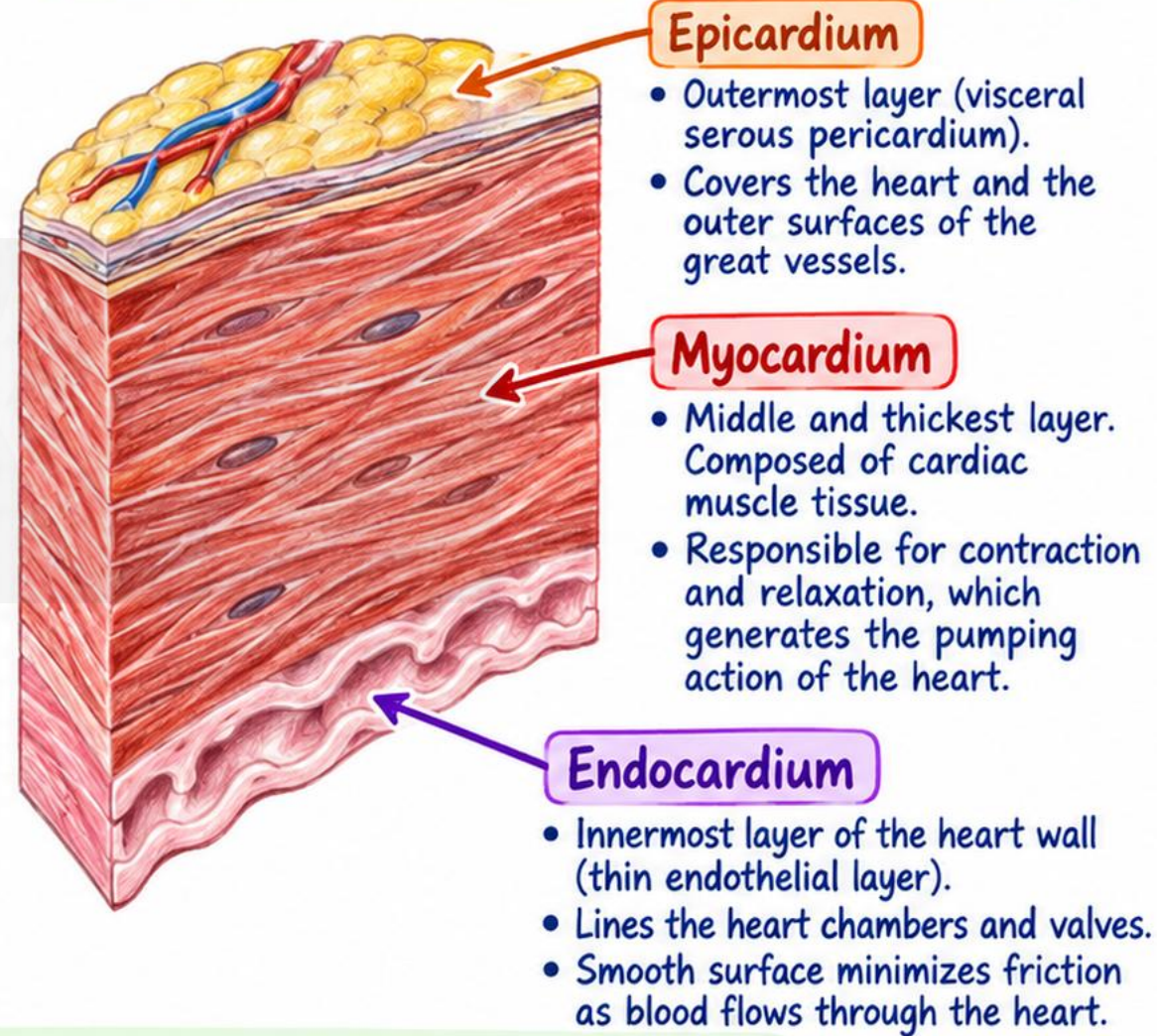
PERICARDIUM AND HEART WALL

PERICARDIUM

- Double-walled sac around the heart and great vessels.
- Fibrous pericardium - tough outer layer for protection and attachment.
- Serous pericardium - inner layer (parietal and visceral layers) with a thin fluid layer between them to reduce friction.
- The visceral layer of the serous pericardium is the epicardium, which covers the heart and the outer surfaces of the great vessels.



LAYERS OF THE HEART WALL



STRUCTURE → PROTECTION + SMOOTH FLOW + POWERFUL PUMPING

HEART VALVES

1. TRICUSPID VALVE

- Located between right atrium and right ventricle.
- Has three cusps (leaflets).
- Prevents backflow of blood from right ventricle to right atrium during ventricular contraction.

3. MITRAL VALVE (BICUSPID VALVE)

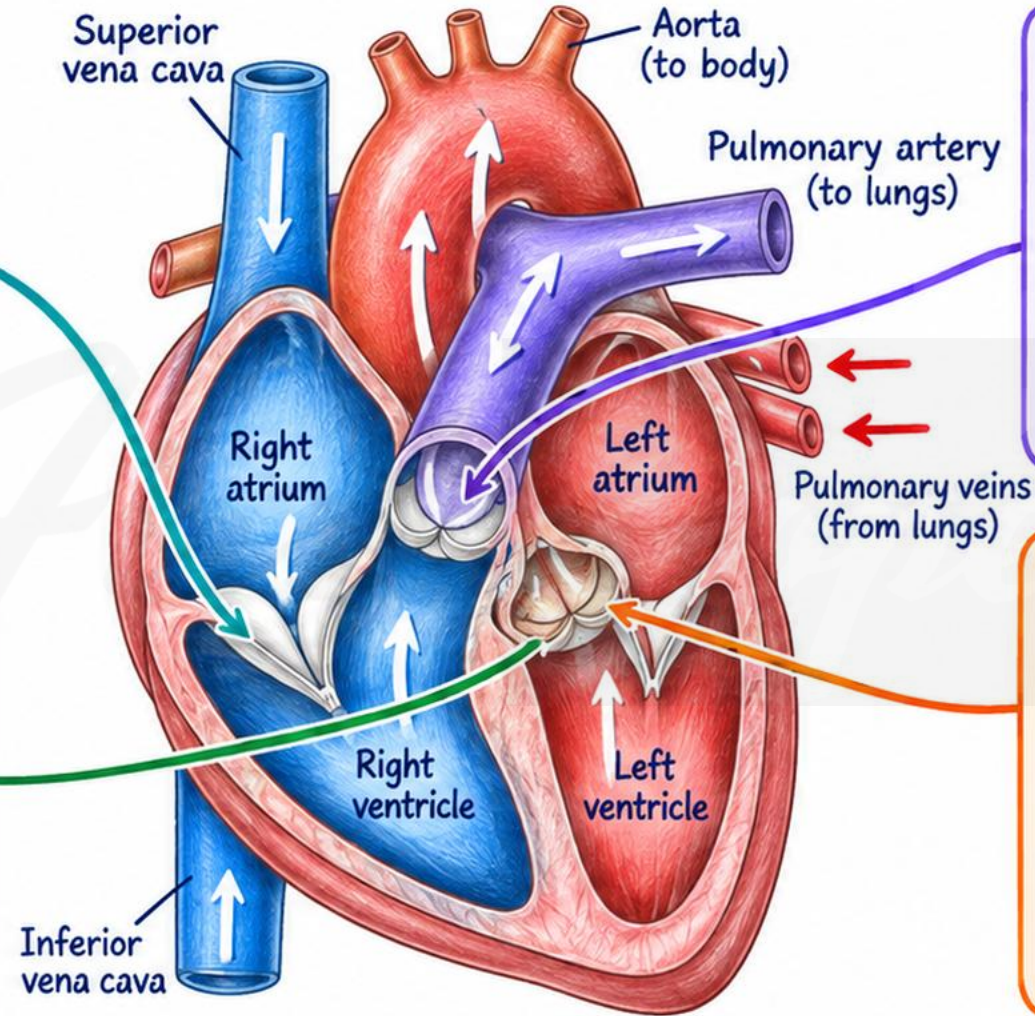
- Located between left atrium and left ventricle.
- Has two cusps (leaflets).
- Prevents backflow of blood from left ventricle to left atrium during ventricular contraction.

2. PULMONARY VALVE

- Located between right ventricle and pulmonary artery.
- Has three cusps (leaflets).
- Prevents backflow of blood from pulmonary artery to right ventricle after ventricular contraction.

4. AORTIC VALVE

- Located between left ventricle and aorta.
- Has three cusps (leaflets).
- Prevents backflow of blood from aorta to left ventricle after ventricular contraction.



AV VALVES: ROLE OF CHORDAE TENDINEAE & PAPILLARY MUSCLES

- Chordae tendineae connect AV valve leaflets to papillary muscles.
- Papillary muscles contract with ventricles to prevent valve prolapse into atria during ventricular contraction.



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