

# YAKEEN NEET 2.0

2026

BODY FLUIDS AND CIRCULATIONS

ZOOLOGY

Lecture – 5

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18.7.2025





## Topics to be covered

1

Human heart ✓

2

3

4

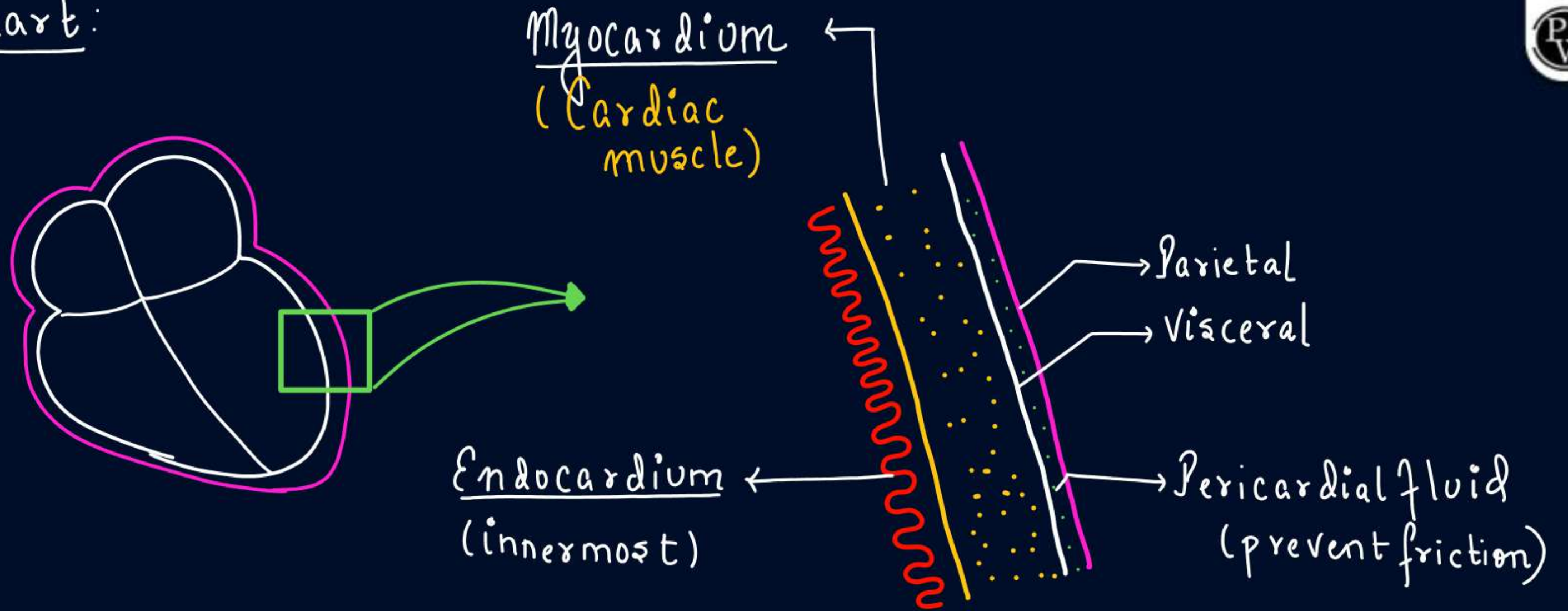


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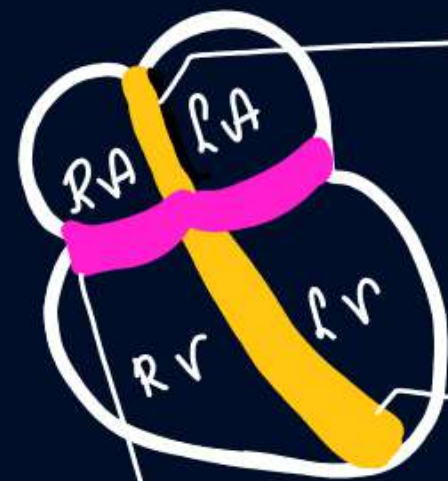


# Wall of Heart:



- 4 Chambers
  - 2 Atria (relatively small)
  - 2 Ventricles

\* SEPTA/WALL present b/w the Chambers of Heart.



① Interatrial Septa

- Thin muscular wall b/w 2 Atria

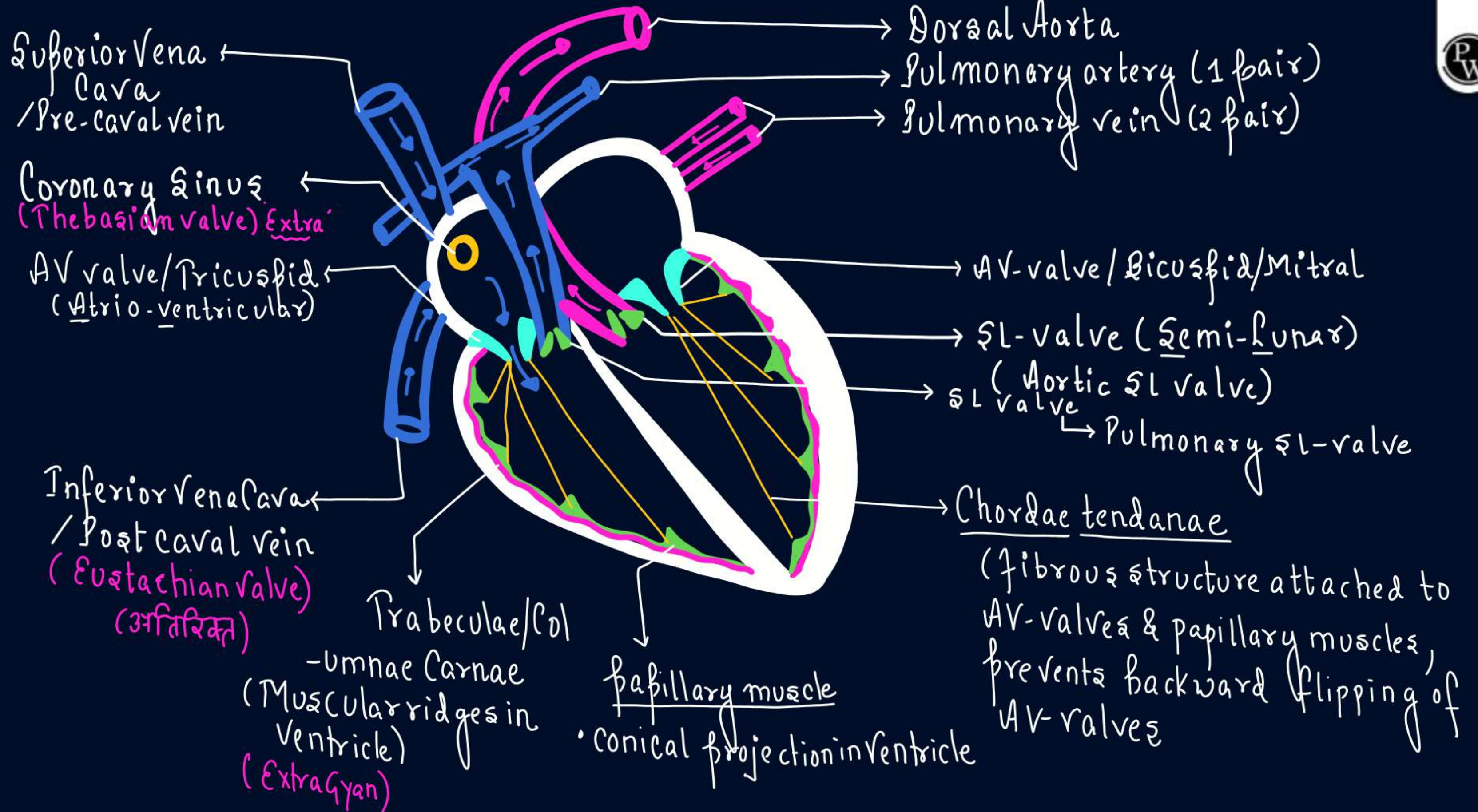
② Interventricular Septa

- Thick muscular wall b/w Ventricle

③ Atrio-ventricular Septa

- Thick fibrous wall b/w Atria & Ventricle of the same side
- Also provided with gaps/opening for communication b/w Atria & Ventricle.







## Some imp. points.



- VALVES: prevent BACKFLOW
- AV-valve
  - Tricuspid: B/w RA & RV
  - Bicuspid: B/w LA & LV
- SL-valve
  - Aortic: B/w LV & Aorta
  - Pulmonary: B/w RV & P. artery
- Ventricle wall thicker than Atria (left ventricle thickest)
  - ↳ pump Blood to Body
- SVC: bring  $deoxy$  blood from upper Body
- IVC: " " " " Lower "
- P. artery:  $deoxy$  from RV to lung
- P. vein:  $oxy$  blood from lungs to LA.



3 muscular flap



2 " "

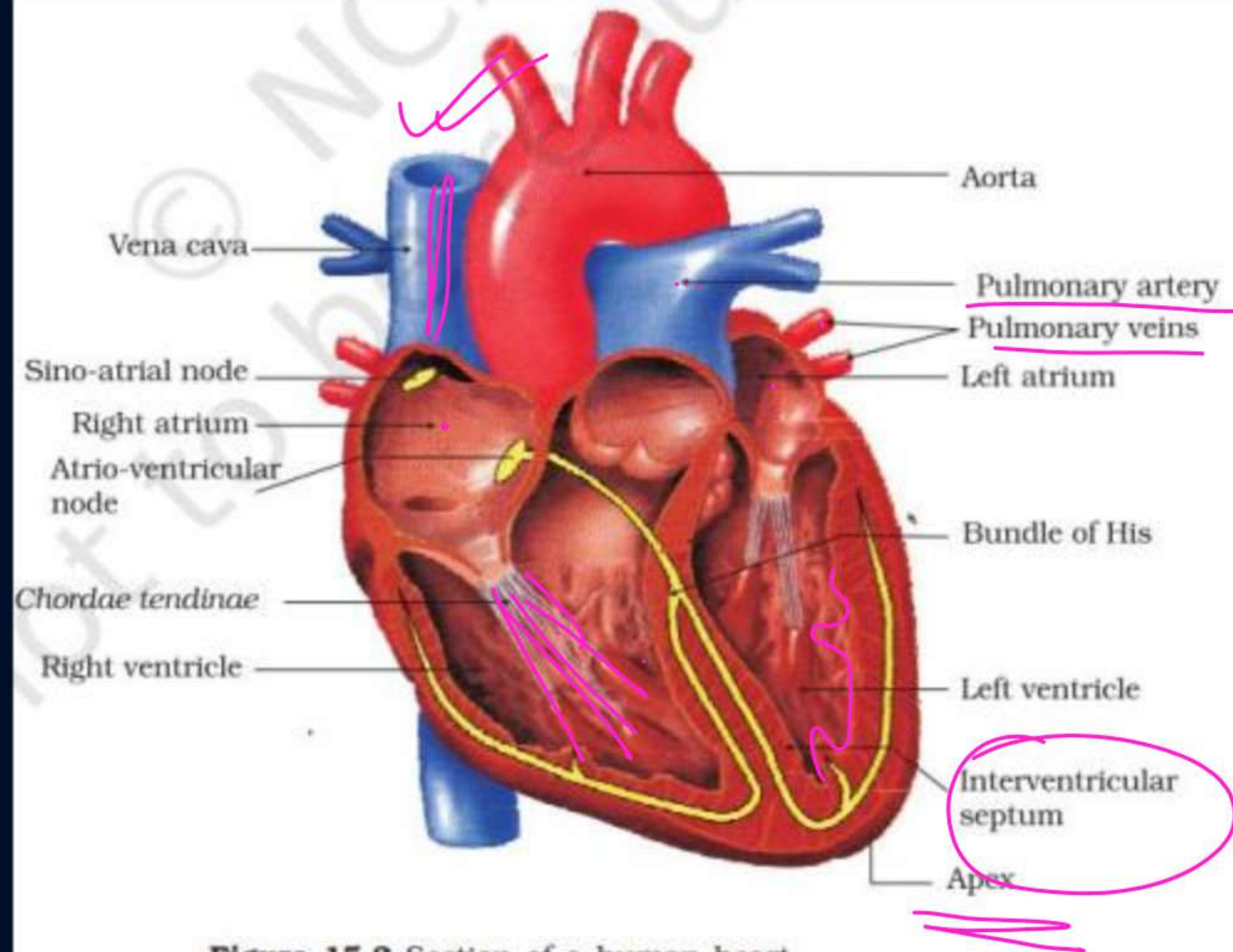


### 15.3.1 Human Circulatory System

Human circulatory system, also called the blood vascular system consists of a muscular chambered heart, a network of closed branching blood vessels and blood, the fluid which is circulated.

**Heart**, the mesodermally derived organ, is situated in the thoracic cavity, in between the two lungs, slightly tilted to the left. It has the size of a clenched fist. It is protected by a double walled membranous bag, **pericardium**, enclosing the pericardial fluid. Our heart has four chambers, two relatively small upper chambers called **atria** and two larger lower chambers called **ventricles**. A thin, muscular wall called the inter-atrial septum separates the right and the left atria, whereas a thick-walled, the inter-ventricular septum, separates the left and the right ventricles (Figure 15.2). The atrium and the ventricle of the same side are also separated by a thick fibrous tissue called the atrio-ventricular septum. However, each of these septa are provided with an opening through which the two chambers of the same side are connected. The opening between the right atrium and the right ventricle is guarded by a valve formed of three muscular flaps or cusps, the tricuspid valve, whereas a bicuspid or mitral valve guards the opening between the left atrium and the left ventricle. The openings of the right and the left ventricles into the





**Figure 15.2** Section of a human heart



## Conducting System of Heart:

- Heart: 'Cardiac muscle'



Most of these muscle fibre are normal but some are SPECIALISED

c/a 'NODAL TISSUES'



(Frog: Myogenic)

(Cockroach: Neurogenic)



To initiate heartbeat  
the input from Nervous  
system required.

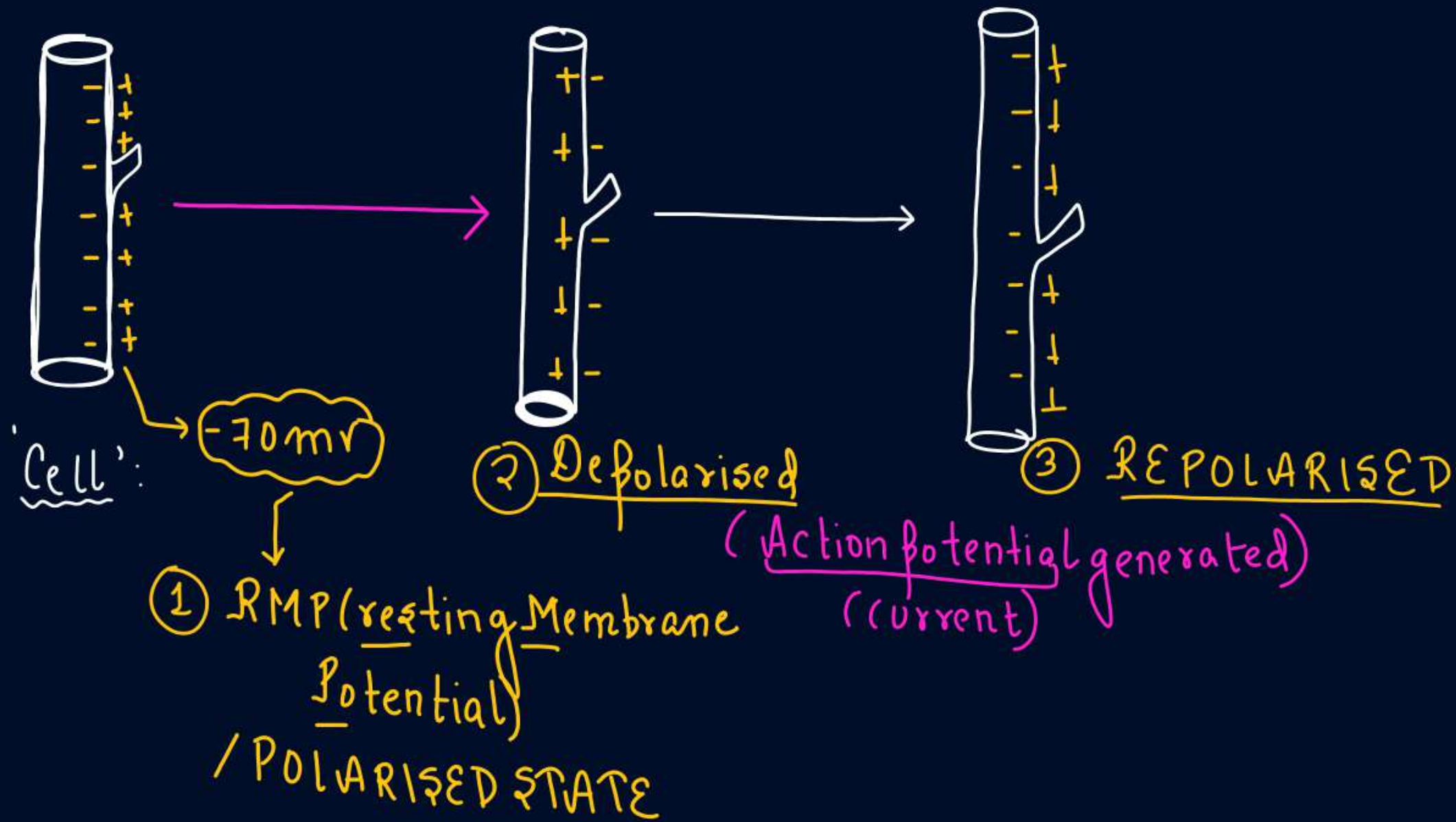
These are 'Autoexcitable' (can generate its own Action potential without input from Nervous system); which makes

our HEART: 'MYOGENIC'



Our nodal tissues can initiate the heartbeat on its own.

# Basics:





pulmonary artery and the aorta respectively are provided with the semilunar valves. The valves in the heart allows the flow of blood only in one direction, i.e., from the atria to the ventricles and from the ventricles to the pulmonary artery or aorta. These valves prevent any backward flow.

The entire heart is made of cardiac muscles. The walls of ventricles are much thicker than that of the atria. A specialised cardiac musculature called the nodal tissue is also distributed in the heart (Figure 15.2). A patch of this tissue is present in the right upper corner of the right atrium called the **sino-atrial node** (SAN). Another mass of this tissue is seen in the lower left corner of the right atrium close to the atrio-ventricular septum called the **atrio-ventricular node** (AVN). A bundle of nodal fibres, atrio-ventricular bundle (AV bundle) continues from the AVN which passes through the atrio-ventricular septa to emerge on the top of the inter-ventricular septum and immediately divides into a right and left bundle. These branches give rise to minute fibres throughout the ventricular musculature of the respective sides and are called purkinje fibres. The nodal musculature has the ability to generate action potentials without any external stimuli, i.e., it is autoexcitable. However, the number of action potentials that could be generated in a minute vary at different parts of the nodal system. The SAN can generate the maximum number of action potentials, i.e.,  $70-75 \text{ min}^{-1}$ , and is responsible for initiating and maintaining the rhythmic contractile activity of the heart. Therefore, it is called the pacemaker. Our heart normally beats  $70-75$  times in a minute (average  $72 \text{ beats min}^{-1}$ ).

Next Catalyst



- 2 When the right ventricle contracts, the blood is pumped into the;
- (A) superior vena cava.
  - (B) dorsal aorta.
  - (C) pulmonary artery.
  - (D) pulmonary veins.

Read the following statements.

Assertion (A): The atrium and the ventricle of the same side are separated by a thick fibrous tissue called the atrioventricular septum.

Reason (R): Mitral valve guards the opening between the right atrium and the right ventricle.

Mark the correct choice as:

- (A) Both Assertion (A) and Reason (R) are true and the Reason (R) is a correct explanation of the Assertion (A).
- (B) Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of the Assertion (A).
- (C) Assertion (A) is true but the Reason (R) is false.
- (D) Assertion (A) is false but the Reason (R) is true.



**Statement-I:** SAN is also called pacemaker.

**Statement-II:** SAN present in right upper corner of atrium can generate the maximum number of action potentials.

- (A) Both Statement I and Statement II are correct.
- (B) Statement I is correct, but Statement II is incorrect.
- (C) Statement I is incorrect, but Statement II is correct.
- (D) Both Statement I and Statement II are incorrect.

Read the following statements.

Assertion (A): AV node generates impulses still it is not called as the pacemaker of heart.

Reason (R): The rhythmicity of impulse production is not highest in AV node.

- (A) Both Assertion (A) and Reason (R) are true and the Reason is the correct explanation of Assertion.
- (B) Both Assertion (A) and Reason (R) are true but the Reason is not the correct explanation of the Assertion.
- (C) Assertion (A) is true and the Reason (R) is false.
- (D) Assertion (A) is false and the Reason (R) is true.



When an action potential is initiated by SAN, which one of the following do not occur?

- (A) Both atria contract simultaneously.
- (B) Blood flow from atria to ventricles increases by 60%.
- (C) Blood from atria to ventricles passes through atrioventricular valves.
- (D) Volume of atria decreases.

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## Homework



**- REVISE CLAASNOTES / ZOOLOGY MED EASY**

**THANK**  
**YOU**