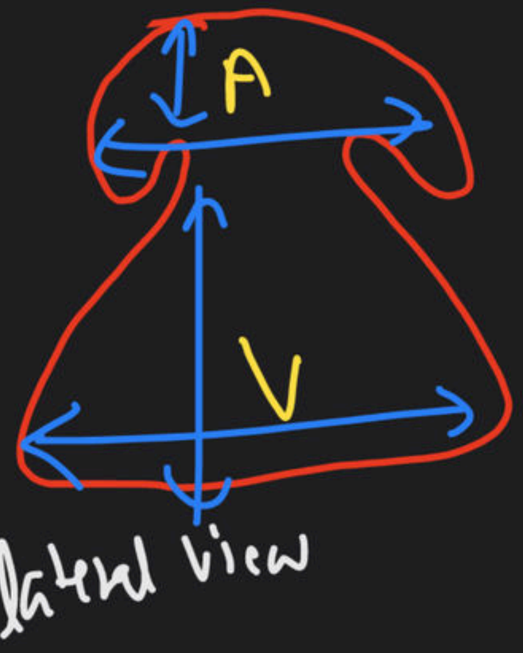
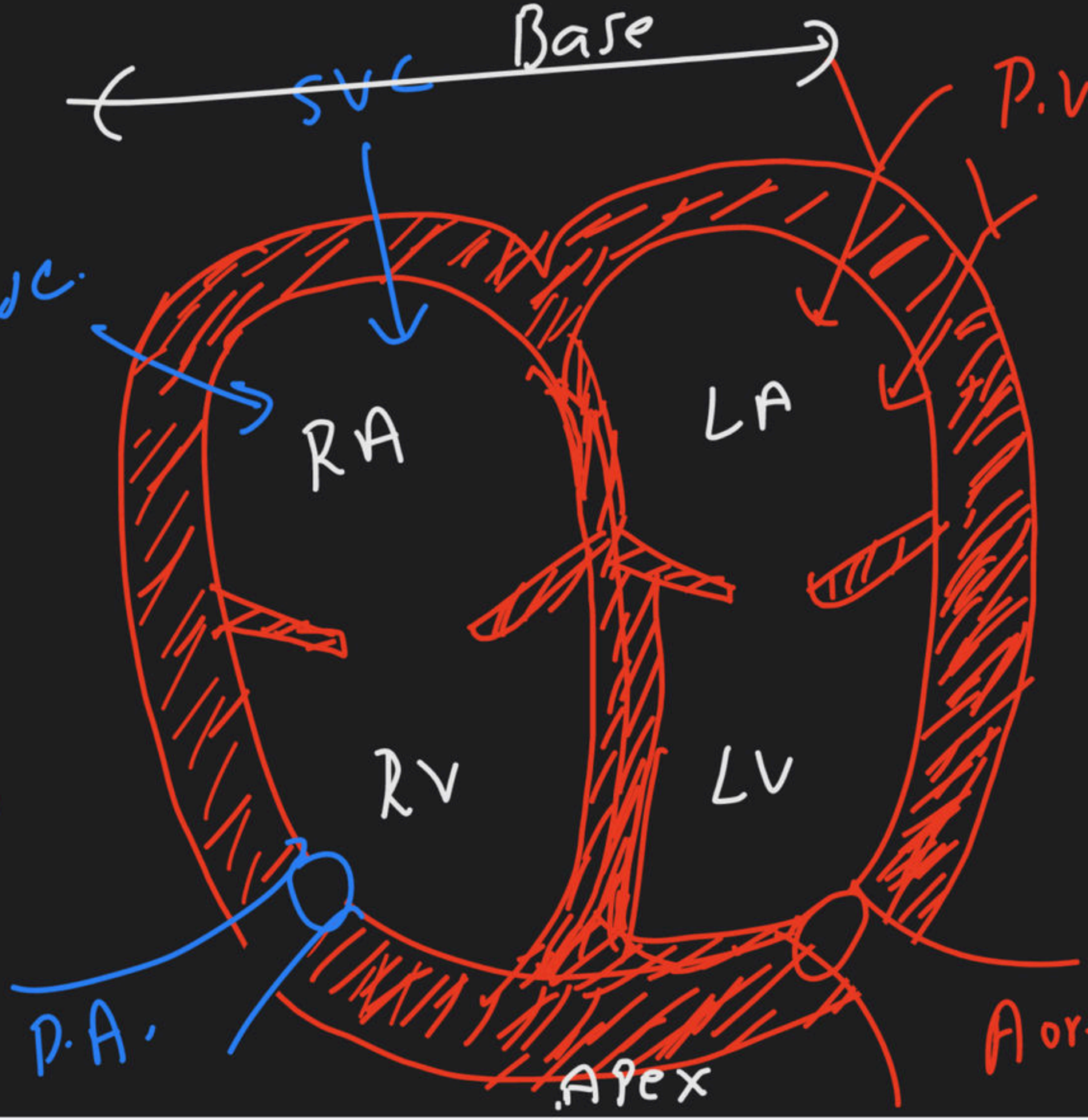
Human Circulatory System - II

Course on Human Physiology: Body Fluids & Circulation

Dr Amit Gupta • Lesson 7 • Sept 16, 2021

Atrium
=
Gathering Chamber





(A) Left Atrium

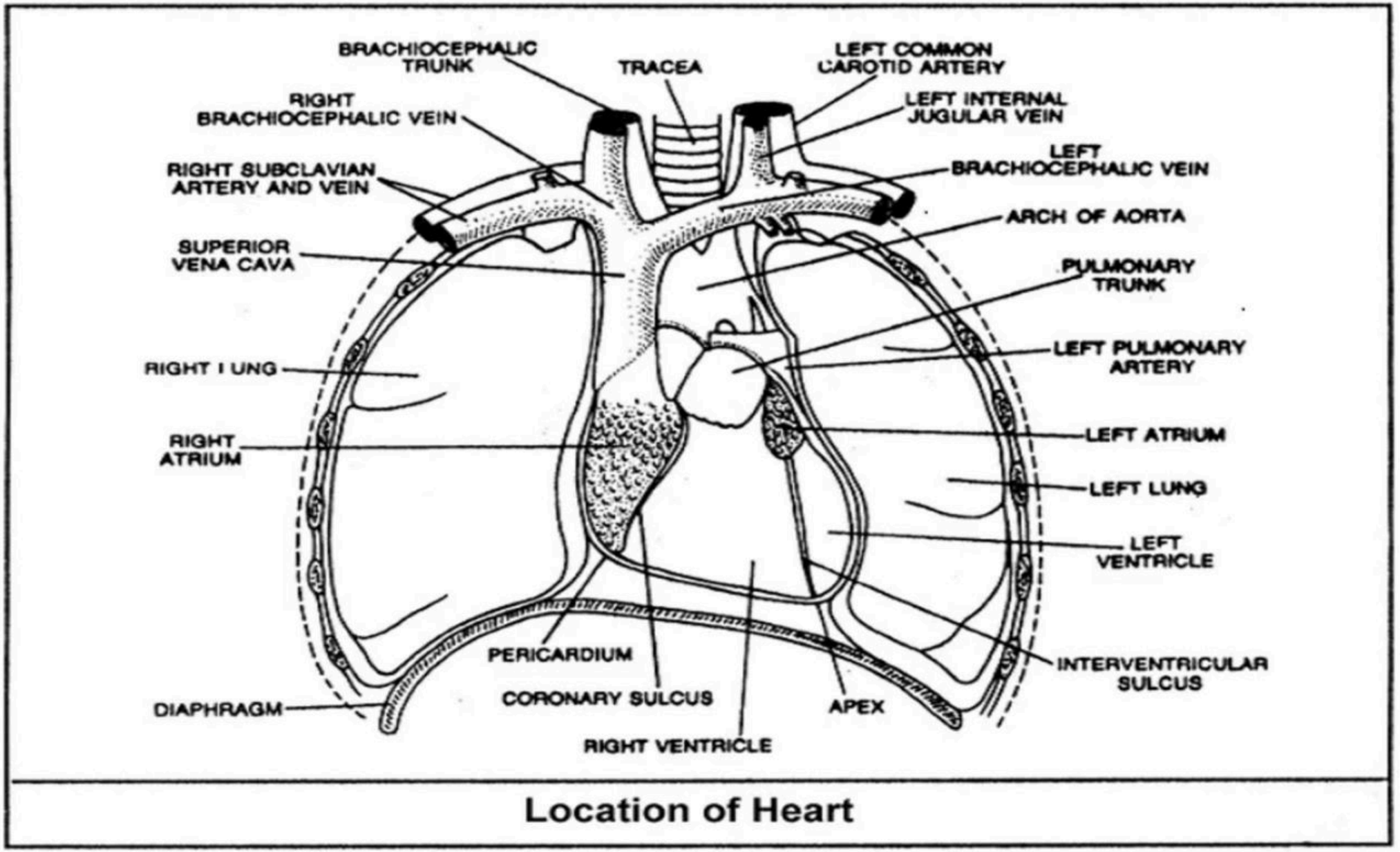
(B) Left Auricle

(C) Los Angeles

(D) A or B

Apex Beat

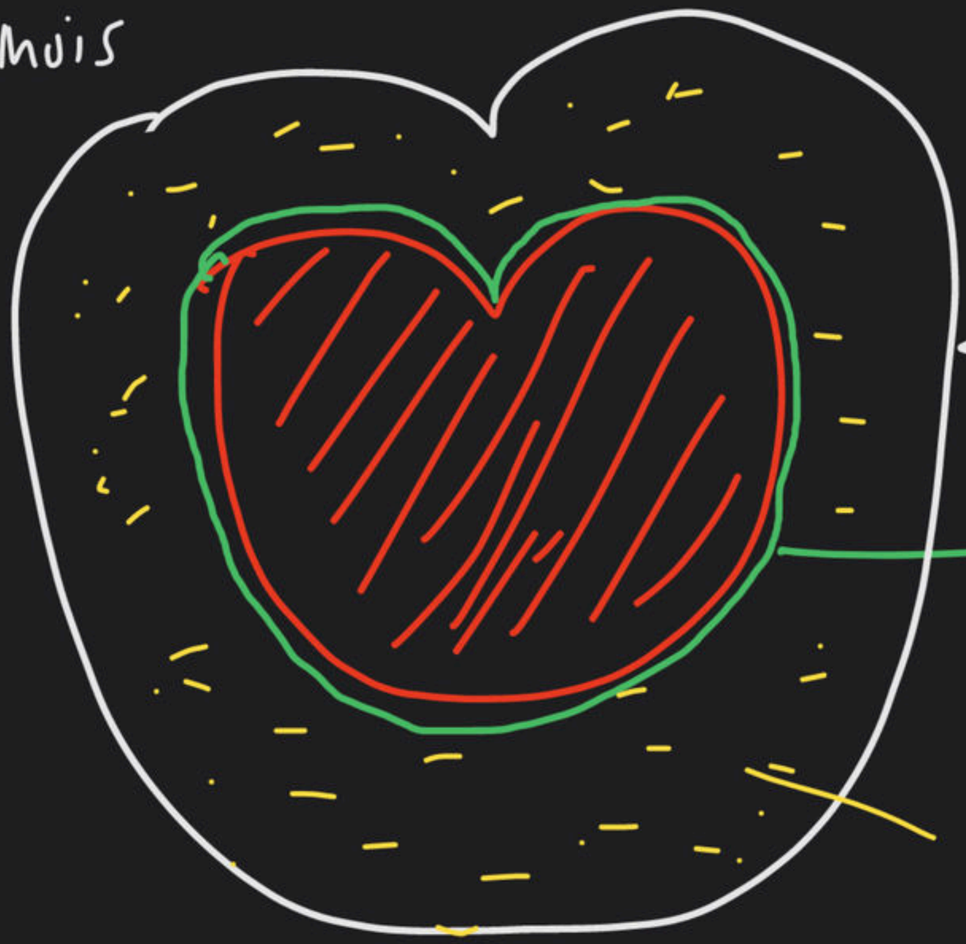
HEART



Location of Heart

Function of P. fluid

1) Keeps outer surface mois
2) Reduces friction
3) Shock Absorber
   Prevents external surface from injury



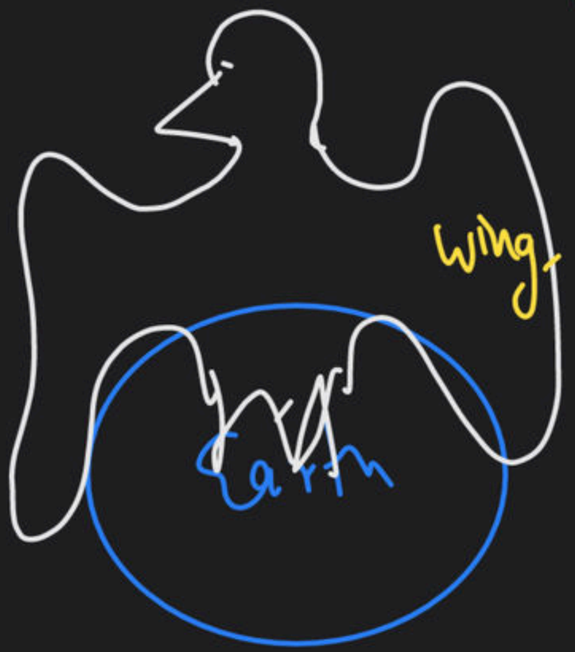
PP (WFCT)

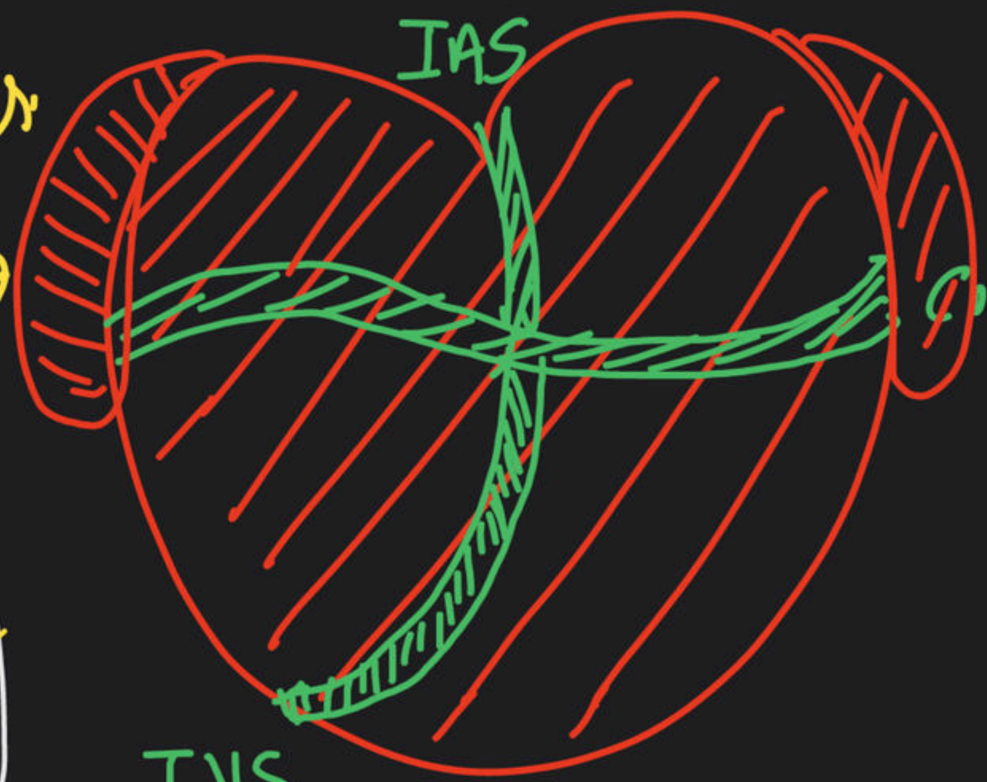
UP (SSE)

Pericardial Cavity filled with Pericardial fluid

(Auricles)

Atrial Appendages

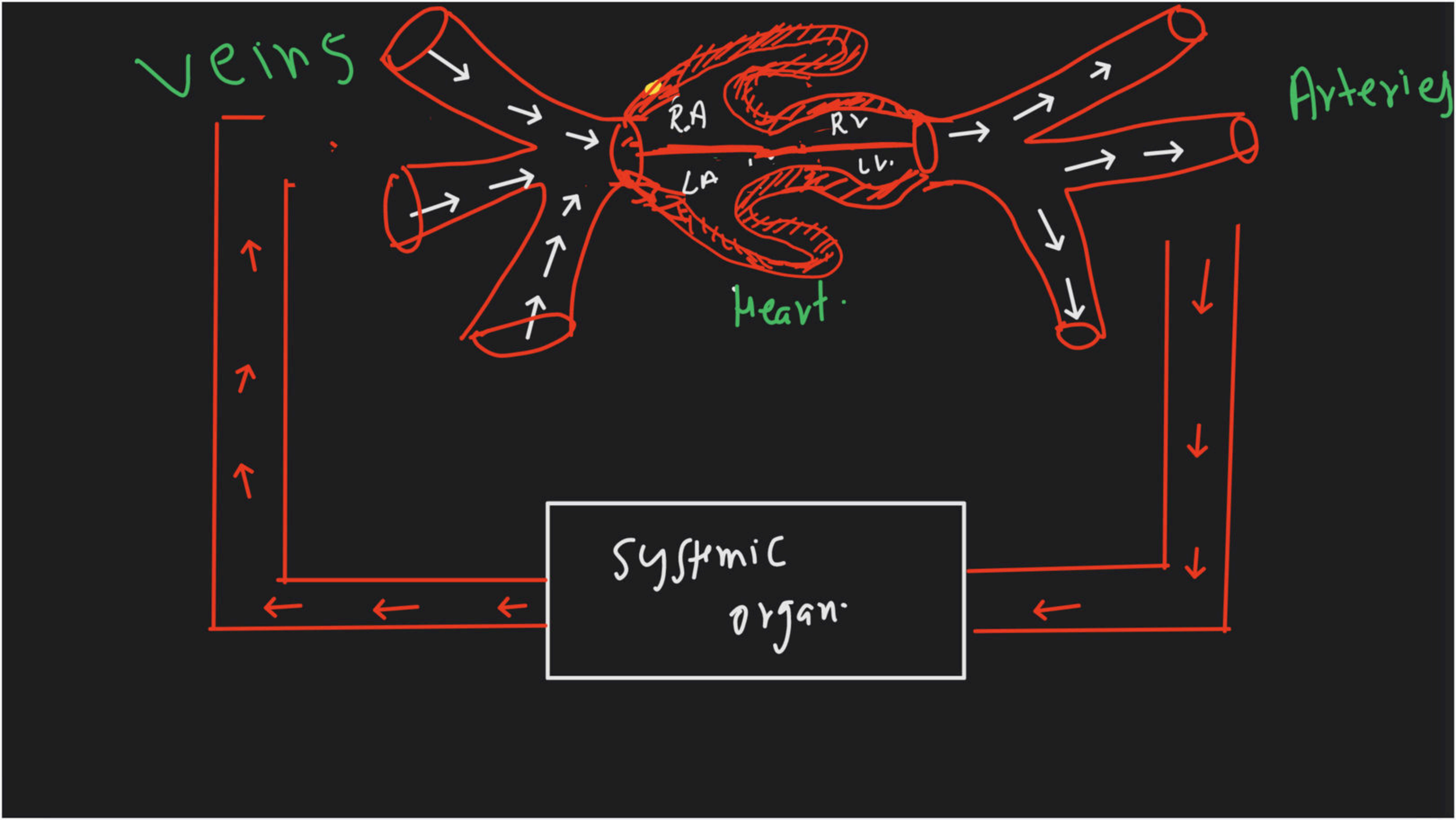


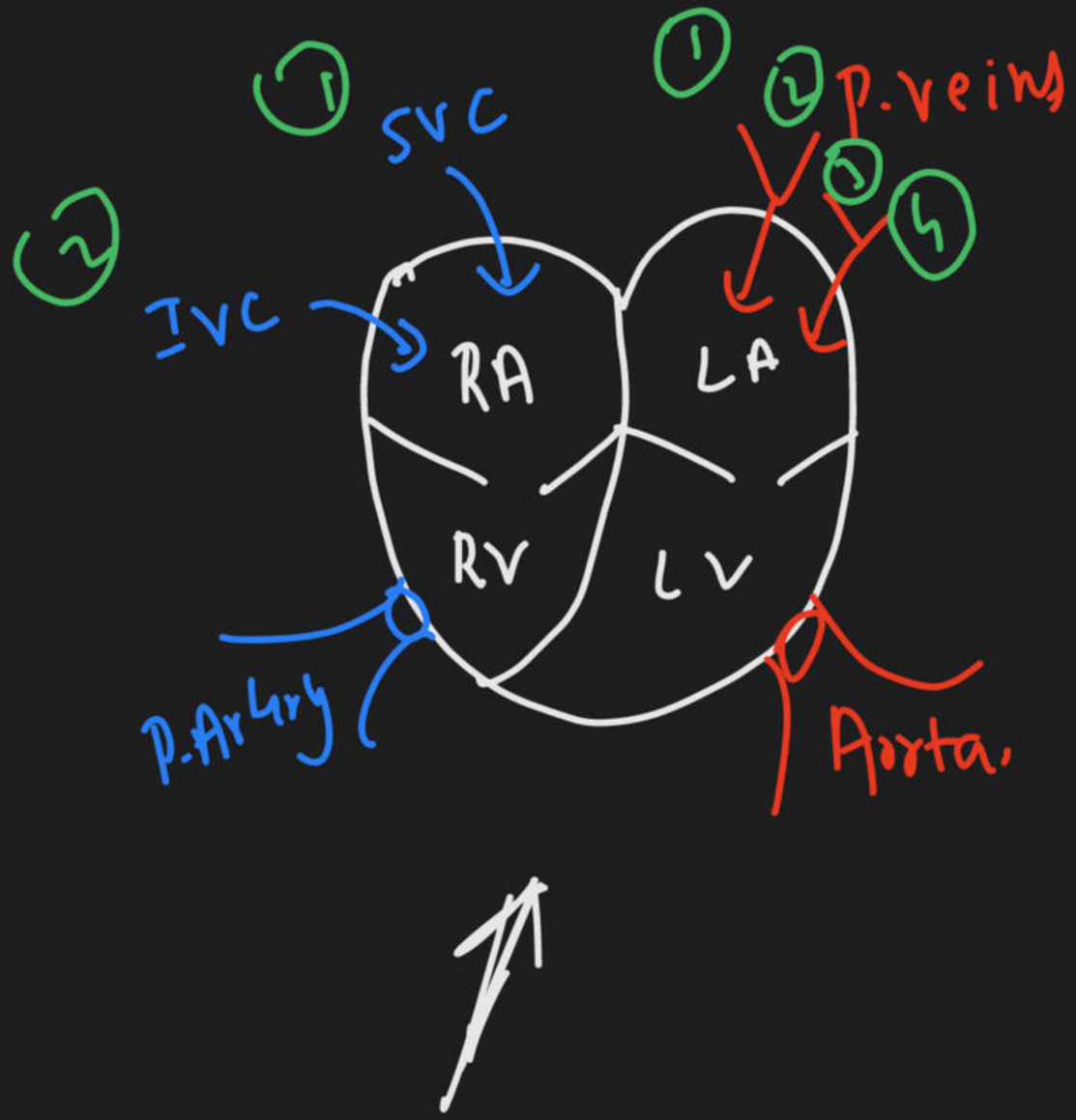


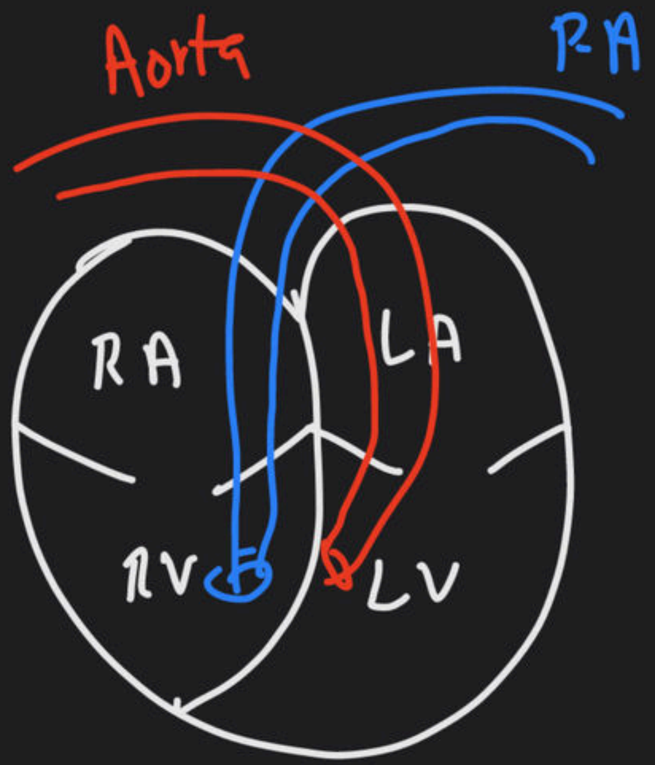
Lt.

Coronary Sulcus.

Auricle = Wings


Veins
Arteries
R.A
R.V
L.A
L.V.
Heart.
Systemic
organ.


1
SVC
2
IVC
RA
LA
RV
LV
P. Artery
1
2
P. veins
3
4
Aorta.


Aorta
RA
RA
LA
RV
LV

Rt

Lt

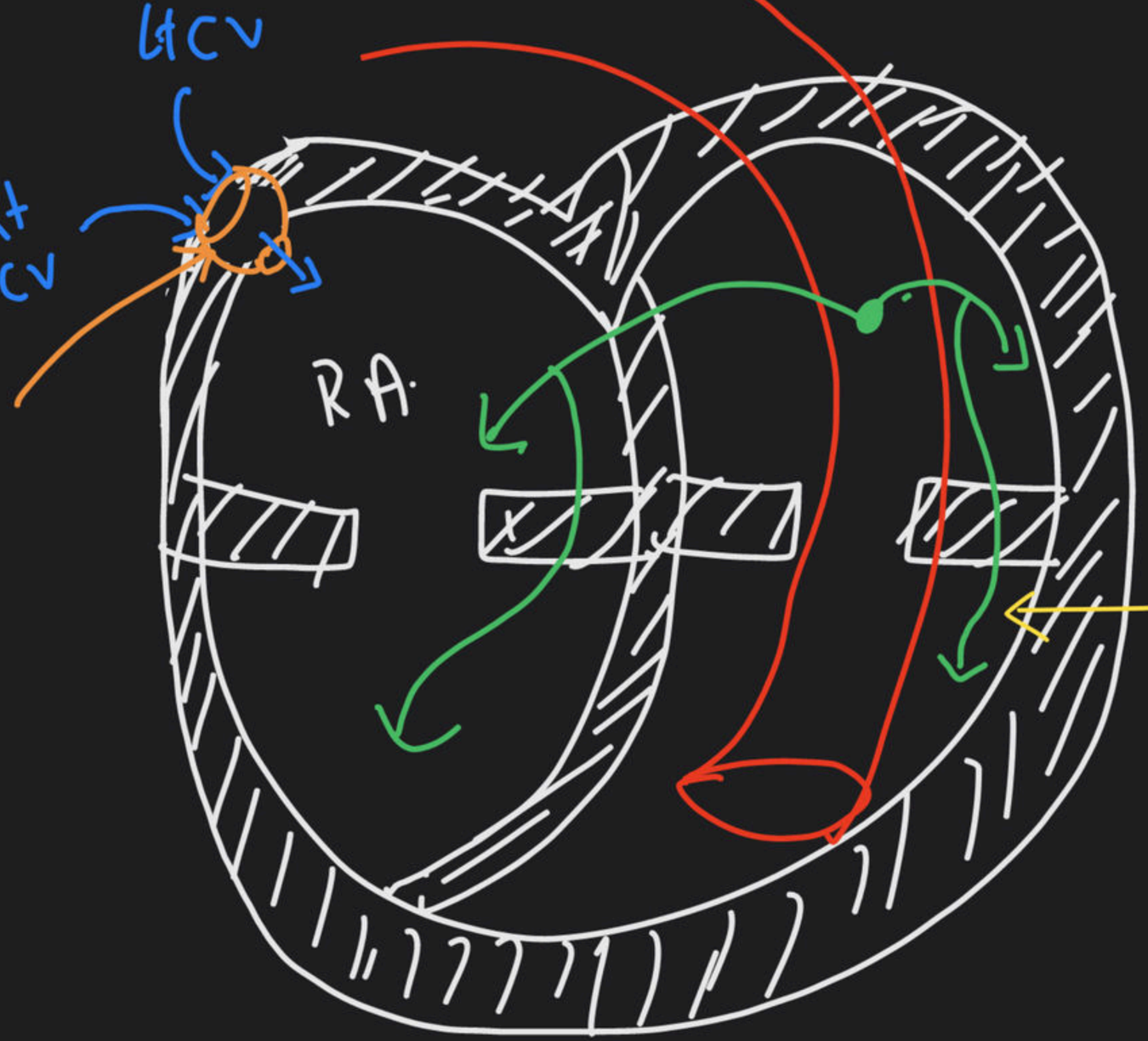
Dry weight = 300 gms

male

250 gm.

female

(Coronary Circulation)



LV → Aorta → Aortic Sinus
↓
Coronary Arteries
↓
Walls of heart
↓
Coronary veins
↓
C. Sinus
↓
RA

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▲ 32 • Asked by Anandkr

School wale bhut disturb kar rhe .... 50 tho project mang rhe h upar se 20th ko lagbhag pura 11 ka jaise taise para ke abs test le rhe h ....ky kare sir ....sir aur board exam ke m

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▲ 31 • Asked by Reeti

Sir..... please bta do mujhe ki kota ki.... environment abhi aachi hui hai ya nhi.....kyuki kl meri sister sb jane wali.....h.....

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▲ 26 • Asked by Abbas

SIR SCHOOL KI WAJAH SE PADHAI NHI HO PAA RHI HAI

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▲ 20 • Asked by Rupesh

sir online study wala class kab lenge

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▲ 17 • Asked by Priti

Hii. Sir todays my birthday plz blessings de dijiye

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▲ 16 • Asked by Sahil

sir excreatory ka match rheta h vo leo

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▲ 14 • Asked by Salman And...

Hats off to u sir sir aap hamare liye itni dikkat se padha rahe hai

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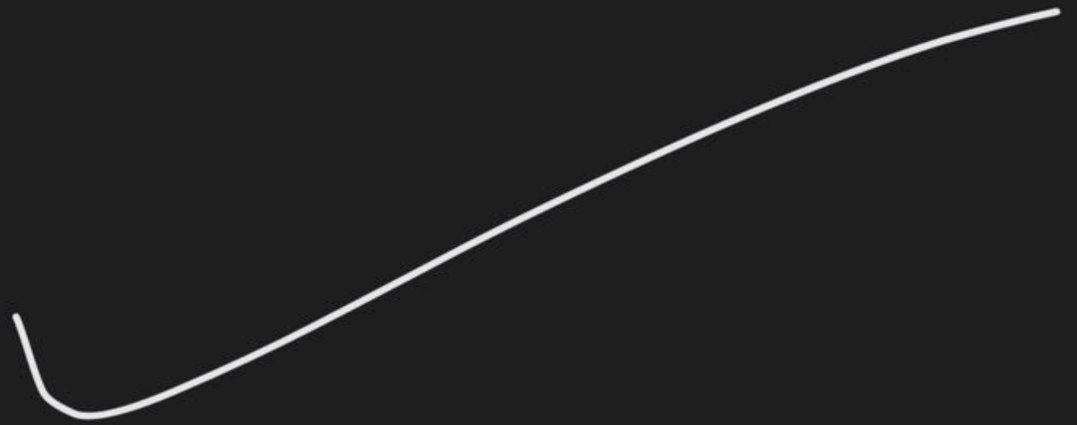
▲ 8 • Asked by Prashant

SIR DROPPER KE STUDENTS AB ENTHUSE KO LEAVE KR KE SUPER ME JA SKTE HAI ??



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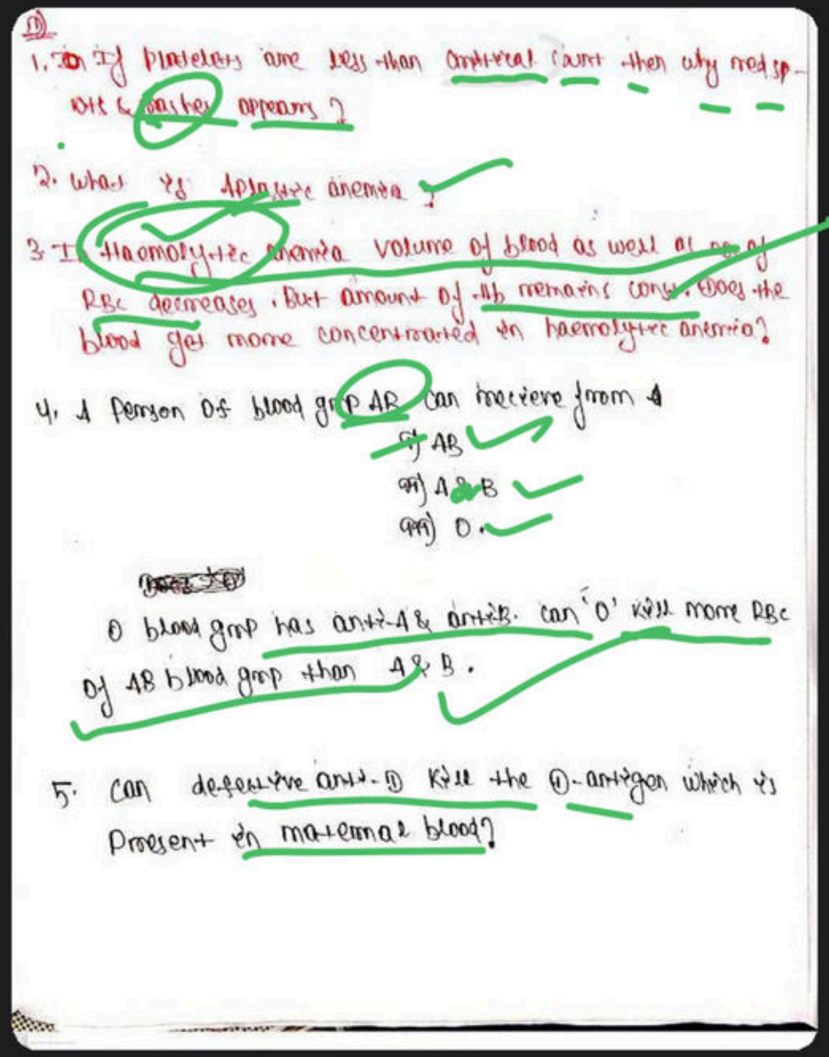
▲ 8 • Asked by Priyansu

Please help me with this doubt



1. If platelets are less than 1 lakh/cmm then why red spots & rashes appears?

2. What is aplastic anemia?

3. In Haemolytic anemia volume of blood as well as no. of RBC decreases, but amount of Hb remains constant. Does the blood get more concentrated in haemolytic anemia?

4. A person of blood grp AB can receive from
(a) AB
(b) A & B
(c) O.

O blood grp has anti-A & anti-B. can 'O' kill more RBC of AB blood grp than A & B.

5. Can defective anti-D kill the D-antigen which is present in maternal blood?

STURCTURE OF HEART

Position, Size and Shape

(i) Human heart is thick, muscular, contractile, reddish brown, contractile automatic pumping organ.

(ii) It is present in the mediastinal space of thoracic cavity in between the lungs.

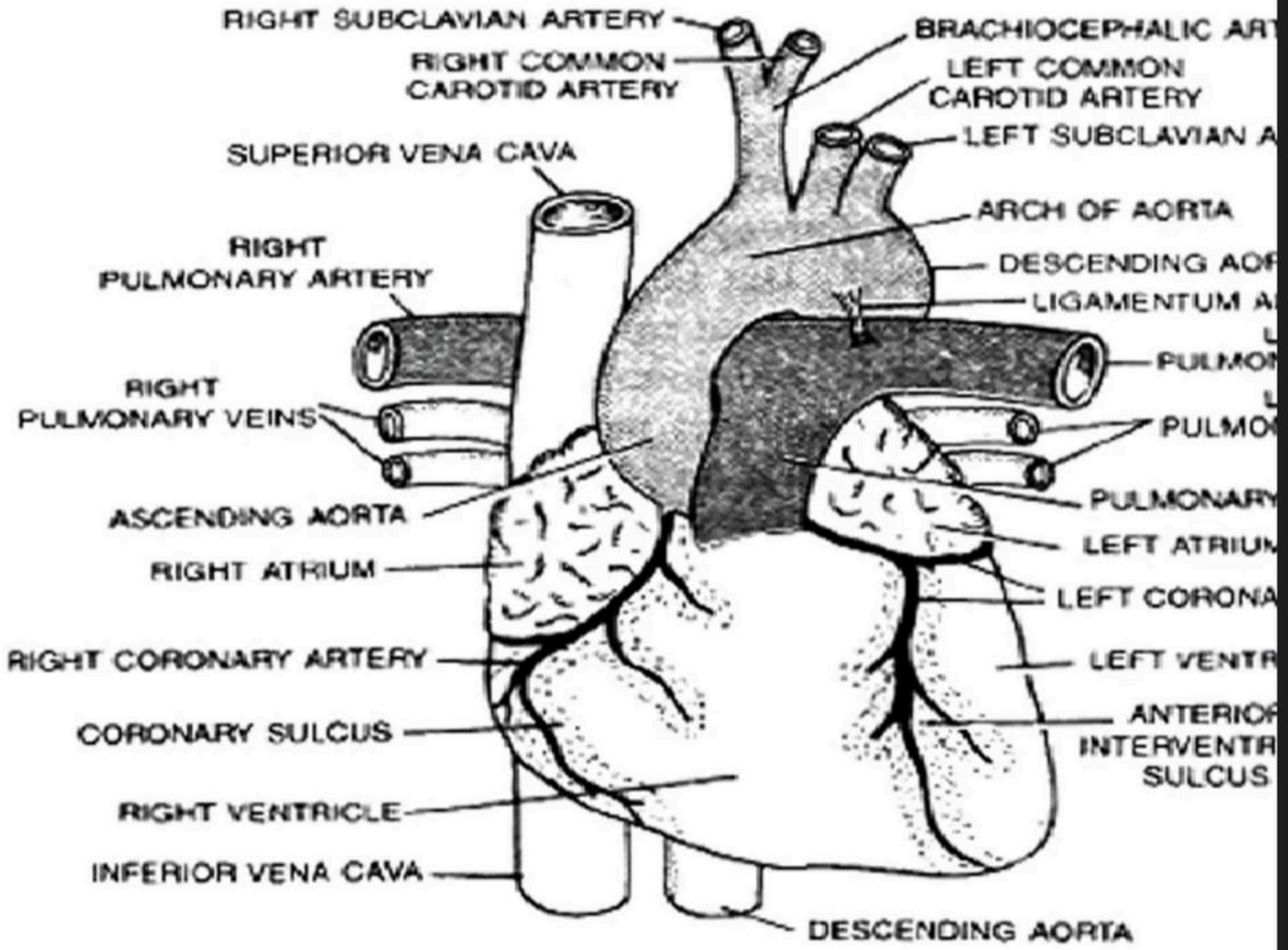
(iii) Human heart 12 cm in length and 9 cm in breath.

(iv) Its weight varies in males from 280-340 gm and in female from 230-280 gm.

(v) Its upper part is broader called **base** whereas, its lower part is pointed called **apex**. The apex is slightly directed to left

(vi) It is covered by a two layered sac called **pericardium.** Outer layer is called **parietal pericardium** and inner layer is called **visceral pericardium** in between two layers pericardial cavity is present which is filled with **pericardial fluid**.

The pericardial fluid keeps the outer surface moist, protects the heart from mechanical injury and shock, it also allows free movement of the heart.


RIGHT SUBCLAVIAN ARTERY
RIGHT COMMON CAROTID ARTERY
SUPERIOR VENA CAVA
RIGHT PULMONARY ARTERY
RIGHT PULMONARY VEINS
ASCENDING AORTA
RIGHT ATRIUM
RIGHT CORONARY ARTERY
CORONARY SULCUS
RIGHT VENTRICLE
INFERIOR VENA CAVA
BRACHIOCEPHALIC ART
LEFT COMMON CAROTID ARTERY
LEFT SUBCLAVIAN A
ARCH OF AORTA
DESCENDING AOR
LIGAMENTUM A
PULMON
PULMO
PULMONARY
LEFT ATRIUM
LEFT CORONA
LEFT VENTR
ANTERIOR INTERVENTR SULCUS
DESCENDING AORTA

- The heart of rabbit or man is four chambered with 2 auricles and 2 ventricles. It is pinkish in colour and conical in shape. The broad upper part of heart is called auricular part or base and lower conical part is called ventricular part (Its tip is called apex.)

  In between the auricles and ventricles, a clear groove is present, which is known as **coronary sulcus.** This groove is more towards auricles, by the effect of this the auricular surface is smaller than ventricles.

(a) Auricles - Auricular part of heart is smaller and of dark colour. Its walls are thin. It is divided into right and left auricles by fissure called **interauricular sulcus,** which is shifted slighty towards left. Therefore out of these two, right auricular surface is bigger than left auricle.

(b) Ventricles - Ventricular part is broad, muscular and of light colour. Ventricles have thicker walls than auricles.

The grooves which divide the two ventricles are termed as **Inter-ventricular groove** or **sulcus**. It is oblique or tilted towards Right. It does not reach till the tip or apex of the heart, So the right ventricle is smaller than the left ventricle.

- Left ventricle is more muscular and got more thick walls as compared to right ventricle because it has to pump blood into those arteries which take blood thoughout the body while right ventricle has to pump blood only to the lungs.

Systemic heart - Left part of the heart (i.e. **left auricle** and **left ventricle**) contains the blood which is to be pumped into the ***systemic circulation,*** therefore it is called systemic heart. The main purpose of such a circulation is to transport oxygen, as well as nutrients to the body tissues, and to remove carbondioxide and other harmful nitrogenous waste from them.

Pulmonary heart - Right part of the heart (i.e. **right auricle** and **right ventricle**) contains the blood which is to be pumped in ***pulmonary circulation*** for oxygenation, therefore it is called pulmonary heart. The pulmonary circulation is responsible for regular oxygenation of the impure deoxygenated blood which is received by the right auricle.

Blood supply of heart (Coronary circulation)

The oxygenated blood is supplied to the heart musculature for its consumption with the help of two coronary arteries, left and right. These arteries arise from the common origin at arch of aorta. the left and right coronary arteries then further subdivide into a number of branches carrying blood to different regions of heart. The impure blood from heart wals return back via coronary veins which drain into the coronary sinus. The coronary sinus opens in the right atrium.

Ischemic heart diseases

If the lumen of any of the coronary artery gets narrowed due to obstruction or cholestrol deposition, the cardiac tissues enter a condition of more demand and less supply whenever the person performs exhertion. Under such hypoxic conditions a pain might arise in heart muscles, this condition is called **Angina Pectoris.** This condition is reversible when the demand supply ratio is restabilised. (i.e. when the person stops exhertion and rests). A coronary artery by pass grafting (CABG) may be required to provide additional channel of blood suppply in such cases.

In coronary artery By pass grafting a part of internal mammary artery or a segment of patients own saphenous vein is used as the By pass channel.

Myocardial Infarction (M.I.) - This is cellular death of cardiac tissue due to anoxia.

When the blood supply to the heart completely stops due to complete blockage of a coronary artery, under reduced oxygen condition the heart tries to restablish the blood supply by working even harder, thus aggravating the situation even further. Due to this reason the cardiac tissue starts dying by necrosis and myocardial infarction sets in, this is an irreversible condition. It is also called as HEART ATTACK in common language.

A blockage of left anterior descending artery (LAD) can be most fatal for the heart, (widows artery)