Chapter - 18 : BODY FLUIDS AND CIRCULATION

One mark Questions

1. What is Blood?

Blood is a special connective tissue consisting of a fluid matrix, Plasma and formed elements.

2. What is plasma?

Plasma is a straw coloured viscous fluid constituting nearly 55% of the blood.

3. Which plasma protein is responsible for clotting or coagulation of Blood?

Fibrinogen.

4. Which plasma protein is involved in defense mechanisms of blood?

Globulins.

5. Which plasma protein is involved in Osmotic balance?

Albumins.

6. What is serum?

Blood plasma without the clotting factors is called serum

7. which is the most abundant of all the cells in blood?

Erythrocytes or RBC

8. Where are the RBCs formed?

Red bone marrow

9. Name the Iron containing protein of Erythrocytes?

Haemoglobin

10. what is the haemoglobin content of a healthy individual in every100 ml of blood?

12 to 16 grams.

11. Mention the role of Haemoglobin in Blood

Haemoglobin play a significant role in transport of respiratory gases.

12. What is an average life span of RBC?

120 days.

13. Which human part is also called graveyard of RBCs?

Spleen.

14. what are Leucocytes?

They are colourless, & nucleated cells without haemoglobin In the blood.

15. What is the another name of platelets?

Thrombocytes.

16. What is the main function of Lymphocytes?

Responsible for immune responses of the body.

17. What kind of effect observed when reduction in platelets number?

Lead to Clotting disorders.

18. Name the antigen present on RBC's of 'o' blood group.

No antigens present on RBC's of 'o' blood group

19. Name the antibodies present in blood plasma of 'o'blood group

anti-a and anti-b

20. Which blood group is considered as Universal donar group?

'o' blood group

21. Which blood group is considered as Universal receipient group?

'AB' blood group.

22. What is main reason for Erythroblastosis foetalis?

Rh incompatibility (mismatching)

23. Define Lymph.

Lymph is a colourless fluid containing specialized lymphocytes Which are responsible for the immune responses of the body.

24. In which group of animals do you find open circulatory system?

Arthropods & Molluscs.

25. In which group of animals do you find closed circulatory system?

Annelids & chordates.

26. How many heart chambers observed in Fishes?

2 chambers.

27. where do you find double circulation (blood circulation) mechanism?

Birds and Mammals.

28. Name the Protective sac(covering) of the heart.

Pericardium

29. Name the chambers of heart which receives oxygenated blood.

Left Auricle

30. Name the artery that carries deoxygenated blood to Lungs.

Pulmonary artery.

31. Name the valve present in between the left auricle

& Left ventricle

Bicuspid valve (mitral valve)

32. Where is tricuspid valve located in the Heart?

Tricuspid valve is located in between the right auricle

And right ventricle.

33. What is Systole?

The contraction of heart chambers is called systole

34. What is diastole?

The relaxation of heart chambers is called diastole

35. What is stroke volume?

The volume of blood pumped out by the ventricle during

Each beat is called stroke volume.

36. Where does the impulse for heart beat originates?

The impulse for heart beat originates in SAN or pacemaker.

37. What type of heart is found in man?

Myogenic heart.

38. Expand ECG

Electrocardiograph.

39. What is Cardiac output?

The volume of blood pumped out by each ventricle per minute.

40. Give the Cardiac output of a healthy individual.

5000ml or 5 Litres.

41 Give the Normal Blood pressure of a Healthy person.

120/80 mm of Hg

42. What is Hypertension?

When the Blood pressure increases above the normal

Level (ie 120/80 mm of Hg) is called Hypertension.

43. What is Atherosclerosis?

Accumulation of calcium, fat, cholesterol and fibrous

Tissues on the inner walls of the arteries is called atherosclerosis.

44. What is Anginapectoris?

A symptom of acute chest pain appears when no enough

Oxygen is reaching the heart muscle.

45. What is Heart Attact?

The Heart muscle is suddenly damaged by an inadequate

bloodSupply.

Two Mark Questions

1. Mention the two special fluids within their bodies of more complex Organisms .

Blood and lymph.

2. Mention the function of any two plasma proteins.

Fibrinogen are needed for clotting of blood.

Globulin are involved in Defence mechanisms.

Albumins are help in osmotic balance.

3. write any four important features of Erythrocytes

(i). RBCs are the most abundant of all the cells in blood

(ii) A healthy adult man has on an average, 5 millions to 5.5 millions of RBCs mm-3 of blood.

(iii) RBCs are formed in the red bone marrow in the adults.

(iv) RBCs are devoid of nucleus and are biconcave in shape

(v) They have a red coloured, iron containing complex protein Called Haemoglobin

(vi) A healthy individual has 12-16gms of Haemoglobin in Every 100ml of blood.

(vii) RBCs play a significant role in transport of respiratory gases

(viii) RBCs have an average life span of 120 days after which They are destroyed in the spleen.

(Any Four)

4. List any four type of Leucocytes.

(i) Granulocytes - Neutrophils, eosinophils & basephils

(ii) Agranulolytes - Lymphocytes and monocytes.

5. Mention any two secretions of Basophils involved in Inflammatory Reactions.

--- Histamine, Serotonin, heparin etc.

6. Give the platelet count of normal healthy person and mention One function of it.

--- 150000—350000 Platelets mm^{-3}

Involved in clotting of blood

7. Mention the type of antigen & antibody present in 'A'&'B'

Blood group

----- 'B' antigen & anti-a antibody for- 'B'blood group

------ 'A' antigen & anti-b antibody for- 'A'blood group

8. Give the antigen & antibody found in <u>'AB'</u> & 'O' blood group

---AB blood group ---- A,B antigens & <u>No</u> antibodies

---'O' blood group ----- No antigens & anti-a&b antibodies

9. What are antibodies with respect to human blood? & mention The types?

-- Antibodies are proteins (globulins) present in the blood

Plasma Types-(i) anti-A (ii) anti-B

10. What are antigens (agglutinins) with respect to human blood? Mention the types.

---- Antigens are glycoproteins present on the surface of RBC's

Types: (i) Antigen .A & (2) Antigen-B

11. Distinguish between antigen & antibody of blood

<u>Antigen</u>	**<u>Antibody</u>**
(1) It is Found on RBC	(1) It is found in the blood plasma
(2) chemically made up of globulin	(2) Chemically made up of Glycoprotein
(3) It stimulates the production Of antibodies	(3) It fight against antigen
(4) It determine blood group	(4) It donot determine blood group

12. Mention the types of circulatory patterns(blood circulation)

with examples**.**

(1) open circulatory system --- Arthropods &Molluscs

(2) closed circulatory system--- Annelids & chordates

13. Name the components of cardiac conducting system

--- (1) Sino-Atrial Node (SAN)

(2) Auriculo-Ventricular Node (AVN)

(3) Bundle of His & (4) Purkinje Fibres.

14. what is Cardiac out put? How do you calculate it?

The volume of blood pumped out by each ventricle

Per minute.

Cardiac out put = Heart rate X Stroke volume.

15. What is Double circulation? Give the significance

At every heart beat the right half receives and pumps

Impure blood.left half receives & pumps pure blood .

This is Called double circulation.

Significance: there is no mixing of pure & impure blood.

16. what is Hypertension? Mention the effects of hypertention

Hypertension (HighBP) is the term for blood pressure that

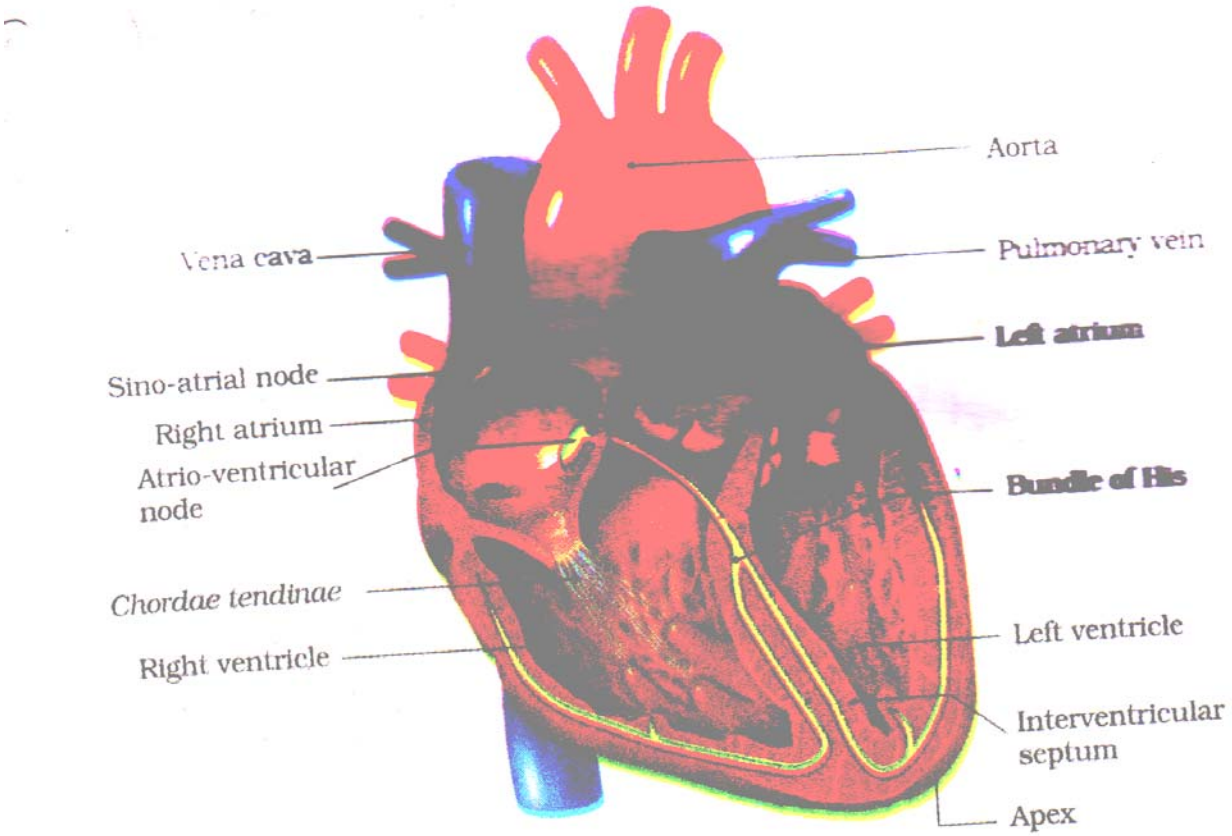
Is higher than normal(ie 120/80)

Effects:- Heart diseases,

- It affects vital organs like brain & Kidney.

4 and 5 Marks Questions

1. Draw a neat labeled diagram of V.S of Human Heart.



2. Explain the ABO grouping of human blood.

Ans:- ABO grouping is based on the presence or absence of

Two surface antigens on the RBCs namely A & B

Similarly, the plasma of different individuals Contain

Two natural antibodies.

The distribution of antigens & antibodies in the

4 group of blood, A,B, AB & O

Blood groups & Donor Compatibility

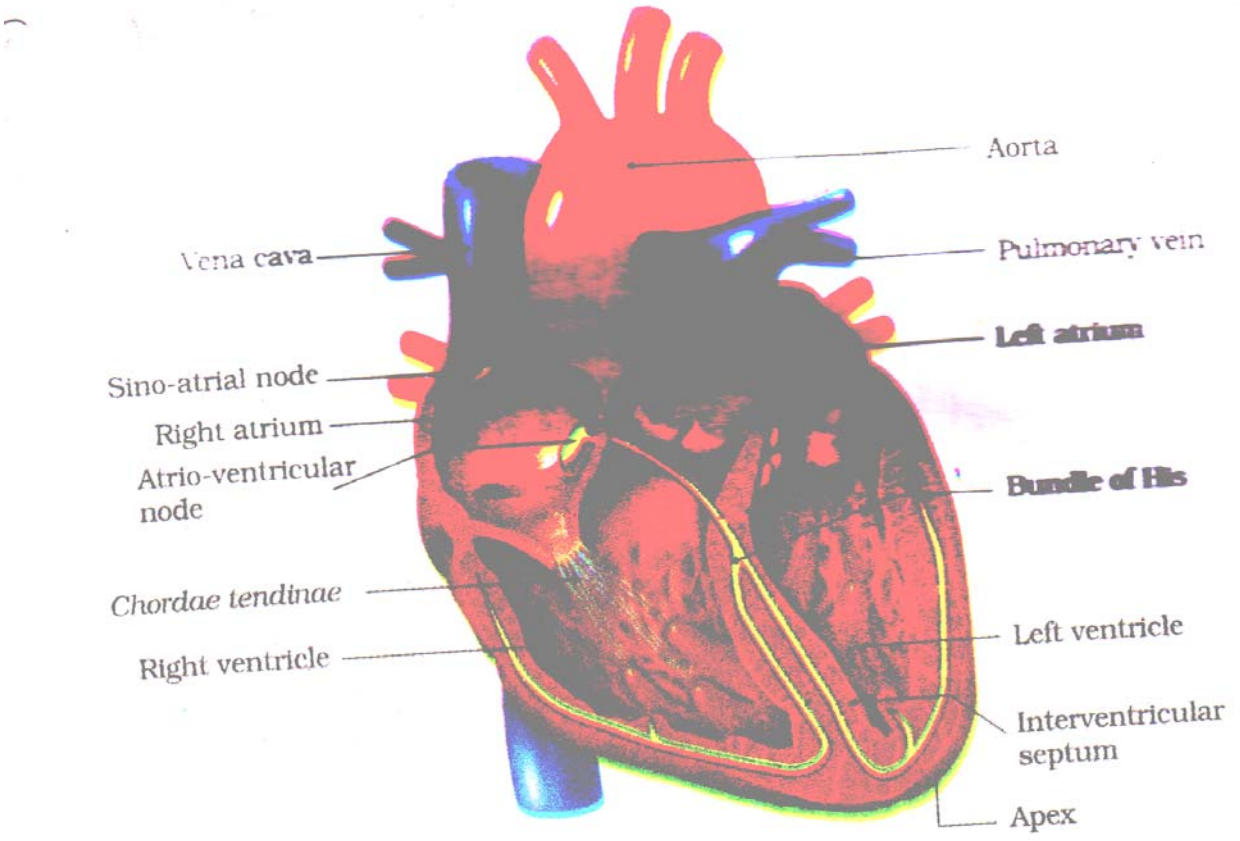
	Blood Groups	Antigens of RBC's	Antibodies In plasma	Donor's group
1	A	A	anti-B	A,O
2	B	B	anti-A	B,O
3	AB	A,B	Nil	AB,A,B,O
4	O	Nil	anti A & B	O

--'AB' blood group is considered as Universal receipients

--'O' blood group is considered as Universal donors.

3. with the help of a neat labeled diagram describe the

Conducting system of Heart.



In human, Heart beat is controlled by conducting system.

It consists of (1) SAN (2) AVN

(3) Bundle of His (4) Purkinje fibres.

(1) SAN (Sino atrial node) OR pace maker: It is mass of Specialized muscle tissue present in the upper part of right Auricle near the opening of the superior venacava. It initiates That heart beat & sets the pace, hence it is called pacemaker

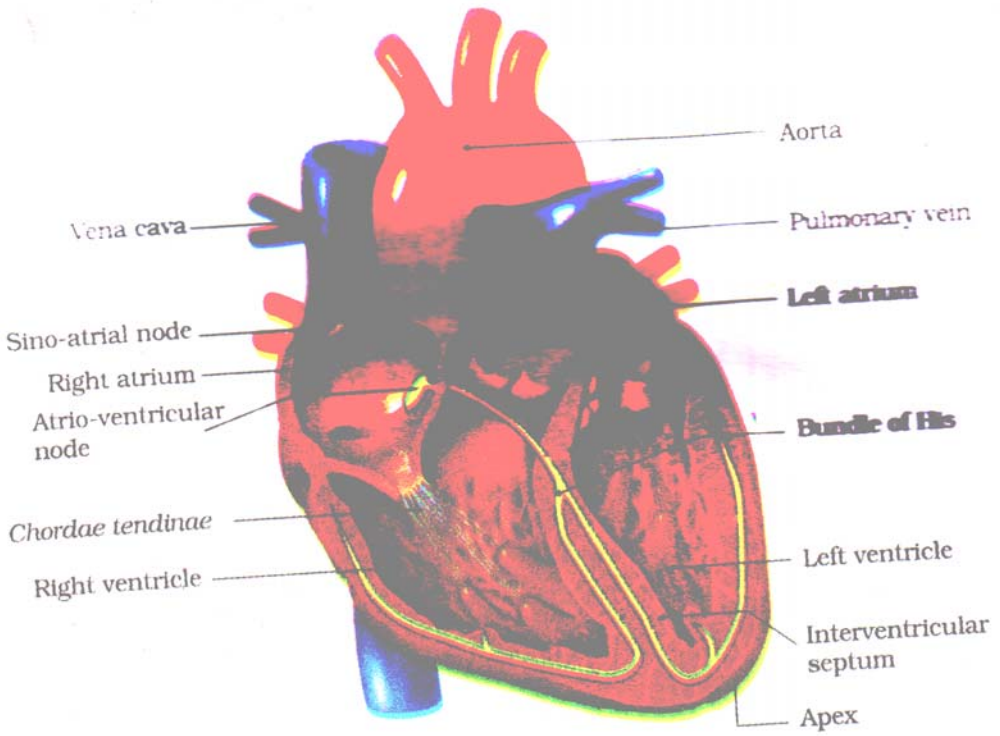
(2) AVN (auriculo-Ventricular node): It is also a specialized Muscle tissue present in the lower part of the inter Auricular Septum.

(3) Bundle of His: This arises from AVN, passes into Interventricular septum & divides into right and left branches

(4) Purkinje fibres: Branches of bundle of His divides into Number of small branches called Purkinje fibres, these Fibres penetrate muscle cells of ventricles.

4.Describe the origin & conduction of Heart beat with a labeled Diagram.

---The human heart is myogenic heart. The entire heart is Made up of Cardiac muscles. The heart beat is initiated & regulated by a mass of muscle tissue called SAN So it is Called Pacemaker (The SAN has the ability to generate action Potentials without any external stimuli, i.e. it is autoexitable) The SAN generates & transmits the electrical Impulses Rhythmically. The SAN generate the maximum no of action Potentials i.e, 70-75 min^{-1}. Our heart normally beats 70-75 times in a minute (Average 72 beats min^{-1})



The impulses generates from SAN are quickly picked by AVN and then transmitted to the walls of ventricles through Bundle of his and purkinje fibres. As a result both ventricles Contract simultaneously.

5. Explain the mechanism of working of the heart (Cardiac Cycle)

The alternate systole(contraction) and diastole(relaxation) of the Auricles and ventricles followed by a short pause is called Cardiac Cycle. It includes following 3 phases.

(1)<u>The Atrial Systole</u>: In This phase auricles contract to pumts the blood into the respective ventricles ie impure blood from Right auricle to Right ventricle and Pure blood from Left auricle to Left ventricle.

(2) <u>Ventricular Systole:</u> In this phase, ventricles contract to Pump the blood into pulmonary artery & aorta

(3) Complete cardiac diastole: It is a pause phase, in which Both auricles & ventricles relaxed During this Period the blood from venacavae & pulmonary veins Emptied into the auricles. The time taken for one Heart beat is 0.8 seconds. The rate of heart beat In a healthy person is approximately 72 times/minute.

6. What is double circulation? Describe with reference to

Human heart.

The circulation in which blood enters & leaves the heart In 2 different circulation is called double circulation.

Two circulations are (1) pulmonary circulation & (2) Systemic circulation.

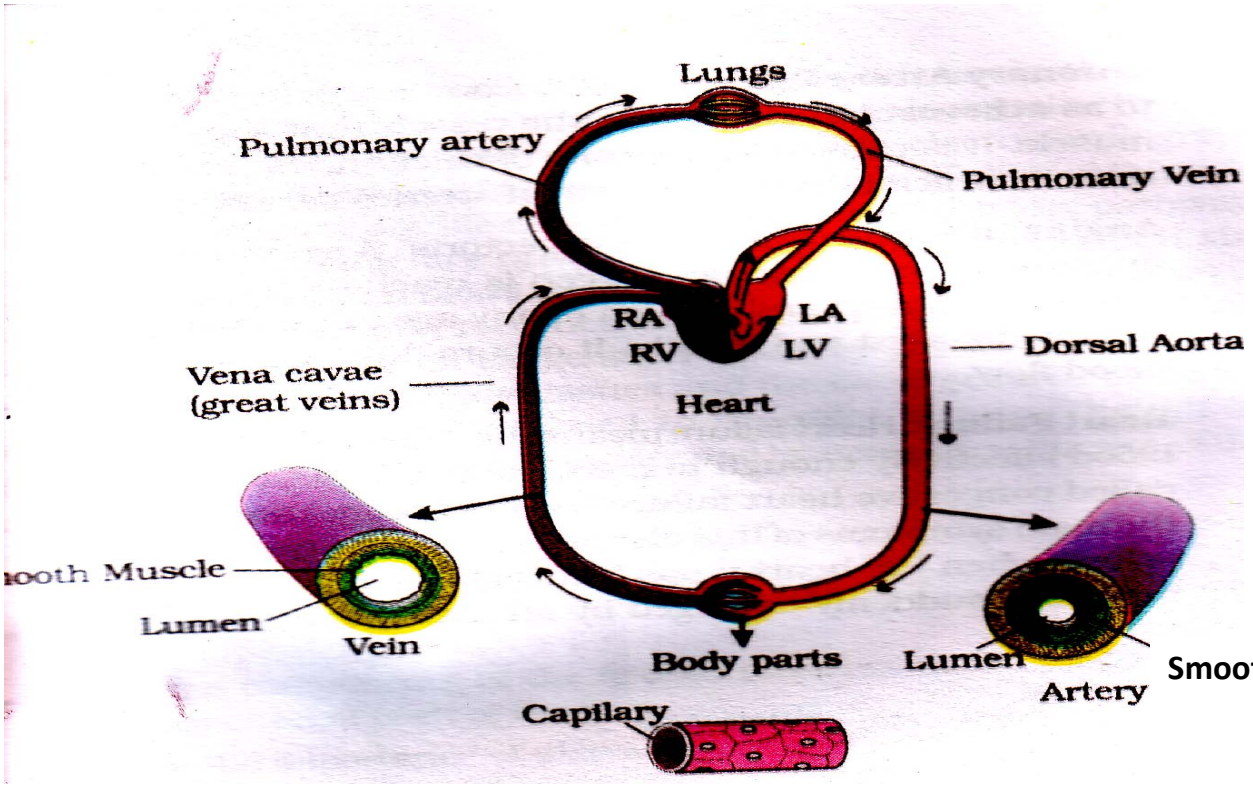
(1) Pulmonary circulation: The circulation of blood from right Side of the heart to the lungs and then back to Left side of the heart is called pulmonary circulation.

The Right auricle receives and pumps impure blood into the Right ventricle. Then the Right ventricle pumps it into the lungs through pulmonary artery. After purification the blood is brought into left Auricle by 2 pairs of pulmonary veins.

This entire route forms pulmonary circulation

(2) Systemic circulation: The Circulation of blood from left Side of the heart to the body tissues & then back to the right Side of the heart is called systemic circulation.

The left auricle receives & pumps pure blood into the left Ventricle. Then left ventricle pumps pure blood to all parts of the Body through aorta & its branches. The impure blood from Various parts of the body reaches Right Auricle through Superior and inferior venacavae. This entire route forms Systemic circulation.



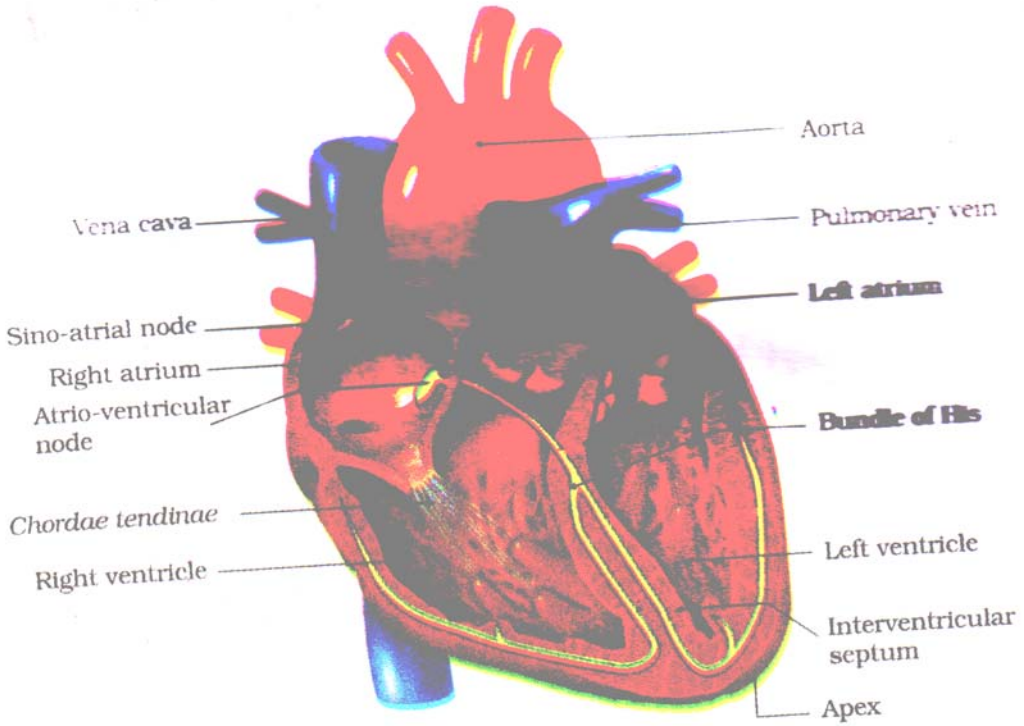


Figure 18.2 Section of a human heart

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