

CBSE Class 11 Biology
Important Questions
Chapter 18
Body Fluids and Circulation

1 Marks Questions

1. Which of the four chambers of the human heart has the thickest muscular wall?

Ans. Left ventricle.

2. Where are RBCs formed from in an adult human?

Ans. RBCs are formed from the bone marrow.

3. What is ECG technique?

Ans. It is a technique to record and photograph the various electrical changes in the working of the heart.

4. In which mammal, the RBC are nucleated?

Ans. Camel.

5. Name any two substances which prevent blood coagulation in uninjured blood vessels.

Ans. Heparin, Antithrombin.

6. Name the type of granulocytes that play an important role in detoxification?

Ans. Eosinophils.

7. A cardiologist observed an enlarged QR wave in the ECG of a patient. What does it



indicate?

Ans. Enlarged Q and R waves are the indication of myocardial infraction.

8.Name the double layered membranous covering of the heart.

Ans. Pericardium.

9.Why lymphatic circulation takes place very slowly?

Ans. Lymphatic circulation occurs due to squeezing action of surrounding muscles and not heart.

10.Name the instrument used for measuring blood pressure.

Ans. Sphygmomanometer.

11.What is a pace-maker?

Ans. A patch of modified heart muscle that initiates a wave of contraction.

12.Why is SA node called pace-maker of the heart?

Ans. SA node being self excitatory, initiates a wave of contraction in the heart.

13.Write the full form of SA node.

Ans. Sinu Auricular Node (Pace-maker)

14.What is lymph node?

Ans. A lymph node is specialized structure in lymphatic vessel concerned with the filtration of foreign bodies by the lymphocytes.

15.A cardiologist observed an enlarged QRS wave in the ECG of a patient. What does it

indicate?

Ans. QRS wave denotes ventricular contraction of heart which may be normal or abnormal.

16.Name the enzyme that catalyses the formation of carbonic acid in erythrocytes.

Ans. Carbonic anhydrase.

17.What is systemic circulation?

Ans. the kind of blood circulation that is concerned with the supply of oxygenated blood from the left ventricle to all body parts and return of oxygenated blood to the right atrium of heart.

18.Give two examples of extra-cellular fluids.

Ans. Interstitial fluid and blood plasma.

19.What name is given to the blood vessels which generally bring blood to an organ?

Ans. Afferent blood vessel.

20.Which adrenal hormone accelerates the heart beat under normal conditions.

Ans. Noradrenalin.

21.Name the blood that carries blood from the intestine to liver.

Ans. Hepatic portal vein.

22. Define cardiac cycle.

Ans. A regular sequence of three events (i) auricular systole (ii) ventricular systole and (iii) joint diastole during the completion of one heart beat.

23. Name the protein found in RBCs.

Ans. Haemoglobin.

24. What happen to a person suffering from hemophilia.

Ans. The person suffering from haemophilia lacks clotting factors in blood, which resul the defective clotting mechanim. In case of injury the person is at risk of blood loss.



CBSE Class 12 Biology
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2 Marks Questions

Page No: 23

Working with Poem

1: The cricket says, "Oh! What will become of me?" When does he say it, and why?

1.Distinguish between mitral and tricuspid value?

Ans.

	Mitral Value	Tricuspid value
1.	It is called bicuspid value	It lies in the region of right atrioventricular aperture.
2.	All the two flaps are of almost equal size.	All the three flaps are different in size.
3.	There are two flaps in this flap.	There are three flaps in this flap.
4.	Check back flow of oxygenated blood into left auricle.	Check back flow of the deoxygenated blood into right auricle.

2.Why does the fish heart pump only deoxygenated blood?

Ans. 1) Atrium receives deoxygenated blood from all parts of the body.

2) It is pumped into the ventricle from where it is pumped to the gills.

3) The oxygenated blood flows from the gills to various parts.

3.How is heart failure different from heart attack?



Ans.

	Heart failure	Heart attack
1.	It refers to the state of the heart when the heart is not pumping blood sufficient to meet the need of the body.	It refers to the state where the heart stops beating.
2.	It is often due to congestion of lungs.	It is due to inadequate blood supply to the heart.

4.Name the different types of granulocytes. Give the function of the one which constitutes maximum percentage of total leucocytes.

Ans. Different types of granulocytes are:

(i) Neutrophils – 62%

(ii) Acidophils (eosinophils) – 3%

(iii) Basophils - 0.5% to 1%

Neutrophils are phagocytic i.e, responsible for protection against infection.

5.Why is closed circulatory system considered advantageous?

Ans. Closed circulatory system is considered advantageous for the following reasons-

a) It maintains sufficient high blood pressure, blood flows at a high velocity; this quickens the supply of needed material and removal of wastes from the tissues.

b) The volume of blood flowing to a particular organ / tissues can be regulated to the need of the tissues.

6.What it is the name of the straw coloured fluid left after clotting of blood? How is it different from blood?

Ans. It is called serum



Plasma without coagulation factors is called serum.

It differs from plasma in having much less quantity of proteins; it is outside the blood vessels.

7. Why is swelling of feet of leg caused when a person stands immobile for a long time?

Ans. When a person stands immobile for a long time, the flow of blood to the leg and feet is reduced temporarily. This leads to an accumulation of fluid in the leg and feet tissues resulting in swelling. But this swelling is subsided when he moves for short time because blood starts circulating again the veins normally.

8. How are the two heart sounds produced during cardiac cycle? Which one of these is of longer duration?

Ans. The two heart sounds are 'lubb' and 'dupp'

- The first heart sound 'lubb' is produced by the closure of AV – valves at the start of ventricular systole.
- The second heart sound 'dupp' is produced by the closure of semi lunar valves at the start of ventricular diastole.

9. What is average number of thrombocytes in blood? What is their function?

Ans. 1,50,000 to 3,00,000 / mm³ of blood

The release substances that are concerned with the clotting of blood.

10. Explain when and how the two sounds of heart are produced?

Ans.(i) 'Lubb' the first sound which is low pitched, is caused by the closure of bicuspid and tricuspid valves.

(ii) 'Dup' the second sound which is high pitched, is caused by the closure of semilunar valves.



11. Define joint diastole. What are the constituents of the conducting system of human heart?

Ans. In a cardiac cycle when both atria and ventricles are in a diastole and are relaxed simultaneously is called a joint diastole.

12. Give the name of various types of formed elements present in the blood.

Ans. Erythrocytes, Lymphocyte, monocyte, neutrophils, eosinophils, basophils and platelets.

Ans: The cricket said the given line when it found that its cupboard was empty and winter had arrived. It could not find a single crumb to eat on the snow covered ground and there were no flowers or leaves on the tree. It wondered what would become of it because it was getting cold and since there was nothing to eat, it would starve and die.

2: (i) Find in the poem the lines that mean the same as "Neither a borrower nor a lender be" (Shakespeare).

(ii) What is your opinion of the ant's principles?

Ans: (i) The lines in the poem that mean the same as "Neither a borrower nor a lender be" are 'But we ants never borrow; we ants never lend.'

(ii) I agree with what the ant says first that one should save something for the future so that he does not need to borrow or lend. But I don't agree with the ant's principle what he told later. If he says he is a friend of cricket then he should also help the cricket at the time of distress. On the other hand I believe that a friend in need is a friend indeed.

3:

Ans: The ant told the cricket to "dance the winter away" because when it asked the cricket what it did in the summers and why it had not stored any food for summers, the cricket Answered that it sang through the warm and sunny months of summers. Therefore, in reply to this, the ant asked the cricket to "dance" the winter away just like



it “sang” all through the summers and did not bother to store food for winters.

4: (i) Which lines in the poem express the poet's comment? Read them aloud.

(ii) Write the comment in your own words.

Ans: <(i) The lines in the poem that express the poet's comment are “Folks call this a fable. I'll warrant it true.”

(ii) This comment by the poet means that this poem is indeed a fable as it had a moral behind it. The cricket did not have anything to eat during the winters because it did not bother to store some food during summers. It was negligent and sang all through the summers. The ant, on the other hand, had built a nice home for itself and had stored food so that it would not starve during winters. It worked hard during summers to achieve this. Thus, the moral of the poem is to be prepared for the adverse times and always work hard instead of being negligent.



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3 Marks Questions

1. What is cardiac cycle?

Ans. Cardiac cycle – The rhythmic contraction and relaxation of cardiac muscles is known as cardiac cycle or heart beat. It is involuntary (automatic). The contraction and relaxation of heart muscles are called systole and diastole respectively. One complete cardiac cycle occurs in 0.8 sec. Three stages of cardiac cycle are-

- 1) arterial systole
- 2) ventricular systole
- 3) Joint diastole.

2. Differentiate between right ventricle and left ventricle.

Ans.

	Right ventricle	Left ventricle
1.	Right ventricle is smaller than the left ventricle.	Left ventricle is comparatively larger than right ventricle.
2.	Moderator band present in it.	Moderator band is lacking in it.
3.	Columnae carneae thicker but less intricate.	Columnae carneae narrower but more intricate.
4.	Receives and pushes deoxygenated blood.	Receives and pumps oxygenated blood.
5.	Crescent shaped.	Biconvex in shape.



6.	The wall of right ventricle is thinner than left ventricle.	The wall of it is thicker than right ventricle.
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3. Write a note on “Regulation of cardiac activity”?

Ans. (i) The special neural centre located in medulla oblongata of brain can moderate cardiac function through autonomic nervous systems. Therefore help in controlling heart regulation.

(ii) The parasympathetic neural signals, (component of ANS) decrease rate of heart beat, speed of conduction of action potential and also the cardiac output.

(iii) The adrenal medullary hormones enhance cardiac output (C.O).

(iv) The neural signals through sympathetic nerves may increase heart beat rate and the strength of ventricular contraction and also cardiac output.

4. Why does lymph contain much less proteins than the blood plasma? Name the two principal lymph vessels in humans.

Ans. Lymph contains much less protein than plasma, because the capillary wall is impermeable to larger molecules like proteins.

The two principle lymph vessels are – Right lymphatic duct and thoracic duct.

5. Differentiate between arteries and veins.

Ans.

	Arteries	Veins
1.	These are vessels containing blood flowing away from the heart.	These are vessels containing blood flowing towards heart.
2.	In these blood flows under great pressure.	Blood flows under less pressure.
	Their walls are elastic, thick and	

3.	muscular.	Walls are thin, non-elastic, fibrous,
4.	They are non-collapsible	Collapsible.
5.	Their cavity is small.	Cavity is large.
6.	Valves are not present in them.	Valves present.
7.	Blood flows with jerks.	Blood flows without jerks.

6.Explain the chemical events that take place to form a blood clot to seal the wound?

Ans. Coagulation of blood –

- 1) When blood comes out of a blood vessel, the platelets clump together, break and release platelet factors, thromboplastin.
- 2)The prothrombin initiates the conversion of prothrombin into thrombin.
- 3) Thrombin catalyse the conversion of fibrinogen into fibrin which forms a mesh / network in which blood cells get entangled.
- 4)Ca⁺⁺ ions are necessary for both the above steps.

7. What is stroke volume? What is its relation will cardiac output ?

Ans. During one cardiac cycle or ore hear* beat the volume of blood pumped by the heart Is called stroke volume. This is normally 70 mL. In one minut the heart beats about 72 time and the amount of blood pumped per minute is called cardiac output. This is usually 4900 mL or litres.

8. A presort suffering from fever is advised to lake blood test. What may happen to his WBC count and why

Ans. The WBC count of this person may show an increase horn the normal range. As pathogens may be present in his body, so the body is producing more WBCs to fight against those pathogens. WBC court is a good tool to asses the presence of infection ma sick person.



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5 Marks Questions

1. Describe the structure of human heart.

Ans. The heart is a muscular organ situated in thoracic cavity which lies above the diaphragm between the two lungs. It is situated almost in the middle of the chest tilted at its apex to the left. It is enclosed in a double walled membranous sac, the pericardium fitted with pericardial fluid. The heart continuous working without stopping throughout the life of an individual. The heart of an average person at rest under normal circumstances beats. 70 to 80 times in a minute when it contracts its forces and pumps the blood into arteries which supply the blood to body organs. In man and other mammals heart is four chambered structure divisible into two halves right and left.

The right & left halves of the heart are completely separated by septa. Each half has an upper chamber called the auricle and the lower chamber called the ventricle. Each auricle opens into the ventricle of its one side through an auriculo-ventricular aperture. The two apertures are guarded by valves which open only into the ventricle and prevent the back flow of the blood. The mitral valve or bicuspid valve having two flaps is present at the AV opening on the left side and the tricuspid valve (with three flaps) on the right side of the heart.

The left ventricle is provided with tendinous cords called chordae tendinae and papillary muscle which prevent the valves from being pushed into auricles when the ventricles contract. The starting point of the aorta at left ventricle there is another set of semilunar valves.



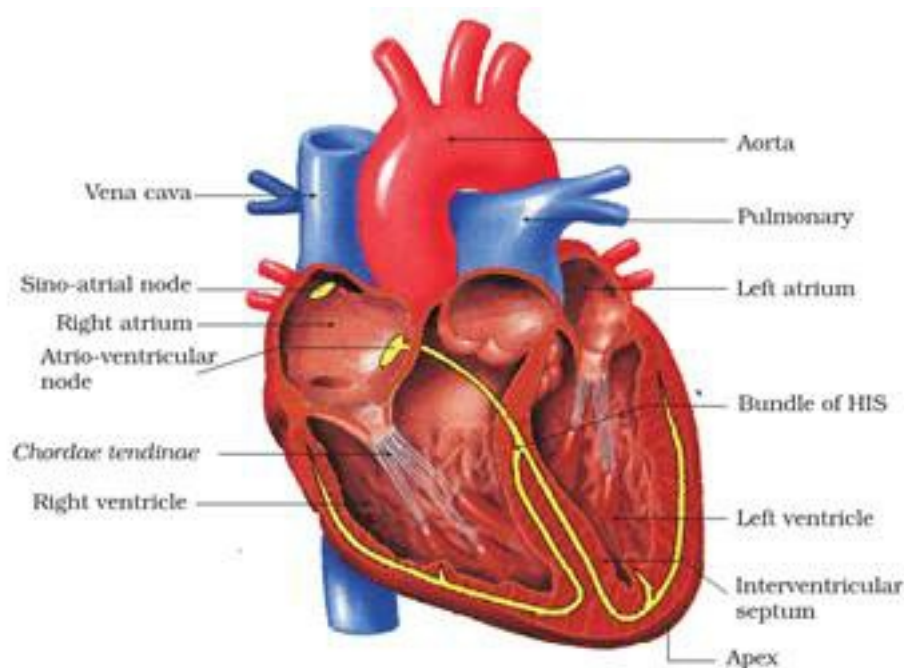


Figure 18.2 Section of a human heart

2. What is lymphatic system? Discuss its importance.

Ans. Lymph is a colourless tissue fluid resembling the blood except that it has no haemoglobin and RBCs. In comparison to blood, lymph contains less blood proteins, more of waste matter, increased amount of food material and a large number of WBC's

The tissue fluid is filtered from the blood plasma through the walls of capillaries some WBC also come out from there capillaries Now this tissue fluid enters into lymphatic capillaries as is known as lymph so the tissue fluid is converted into lymph.

Circulation of lymph:

Lymph vessels : Almost all of the body organs have a large number of lymph vessels and lymph capillaries. The walls of lymph vessels have valves (like veins).

They form the network in the organs – one is superficial and other is deep seated. The flow of lymph in these vessels is only one side i.e., from the organs but never to the organs. In human body the following two large lymph vessels are present.

Ductus Thoracicus – It start from the abdominal cavity with a dilation called receptaculum chyli. Then it passes into the thoracic cavity then to the left of the neck region. It receives the lymph from the following organs – lower extremities, region of the true pelvis, abdominal

region, left upper extremities the left half of the thorax, head, face & neck.

Lymph nodes – These are small globular masses of lymphatic tissue and these arranged in groups from each region organs of the body the lymph flows into definite lymph nodes. The nodes are called regional nodes.

Function of lymph:

- (i)** It serves to return interstitial fluid into blood.
- (ii)** It allows plasma proteins macromolecules to diffuse through the lymph vessels.
- (iii)** It transport digested fat through lacteals in villi of intestine.

3. Explain double circulation with the help of diagram.

Ans. The heart is the pumping organ. It pumps blood to the various body organs, through closed vessels. From the left ventricle blood goes with aorta which send it to arteries for supplying the body organs. From the body tissues blood is returned to the right atrium through two veins superior and inferior vena cava. This type of circulation is known as systemic circulation.

From the right ventricle blood is pumped into the pulmonary trunk which divides into the pulmonary arteries each of which goes to the lung. Here the blood is oxygenated. The oxygenated blood is returned to left atrium through pulmonary veins. This is called pulmonary circulation.



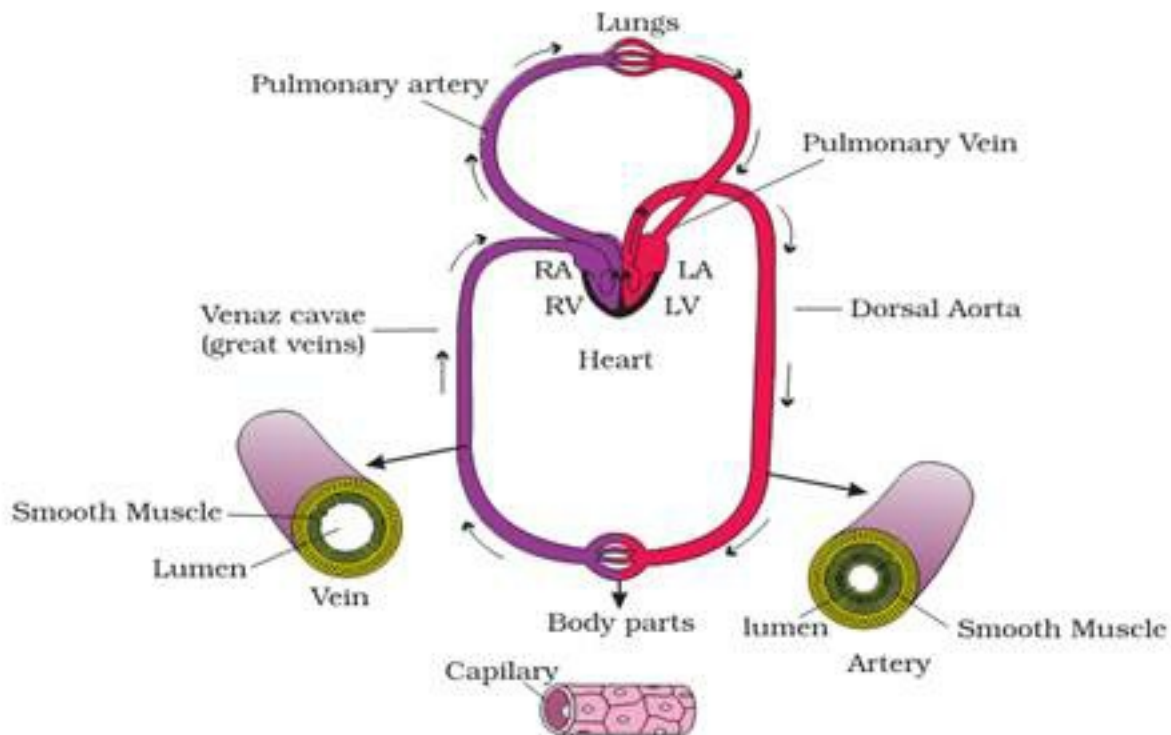


Figure 18.4 Schematic plan of blood circulation in human