

Short Answer Type Question-I

Q.1. Describe the role of haemoglobin in the transport. [KVS Agra 2017]

Ans. Role of haemoglobin in the transport of respiratory gases are :

- (i) Oxygen binds with haemoglobin to form oxyhaemoglobin. 1 molecule of haemoglobin carries 4 molecules of oxygen.
- (ii) CO₂ binds with haemoglobin to form carbamino- haemoglobin. CO₂ is carried as carbamino-haemoglobin by blood.

Q. 2. What is intracellular circulation ? Name any two organisms that show this circulation.

Ans. Practically in all living cells and unicellular organisms (*e.g., Paramecium*) the cytoplasm shows streaming movement, called cyclosis. Cyclosis helps in the distribution of materials in the cells. It also plays an important role in amoeboid locomotion found in certain protozoans (*e.g., Amoeba*) and white blood corpuscles.

Q. 3. What is pericardium and how it is helpful to humans ?

Ans. It is two layered sac consisting of outer parietal pericardium and inner visceral pericardium. In between the two layers, a space called the pericardial cavity is present which is filled with a pericardial fluid.

Significance: The pericardium protects the heart from shocks and mechanical injuries and also allows free movement of the heart.

Q. 4. What is an artificial pace-maker and what does it consist of ?

Ans. An artificial pace-maker is an electronic device which regularly sends small amount of electrical charges that stimulate the heart. The artificial pacemaker consists of (i) a pulse-generator containing cell (solid state lithium cell) to produce electrical impulse, (ii) the lead in the form of a wire which transmits the impulse and (iii) an electrode, which is connected to the portion of the heart where impulse is to be transmitted.

Q. 5. While blood of earthworm and human being is red in colour, even then they are considered different. How ?

Ans. This difference is due to the location of hemoglobin. In earthworm, it is present in dissolved form in plasma whereas in humans, it is present in R.B.Cs.

Q. 6. From which cells do platelets originate ? What is their life span ? How do they act when blood vessels get injured ?

Ans. Platelets are produced from megakaryocytes present in the bone marrow. The life span of platelets is 3 to 7 days only. When an injury is caused the blood platelets disintegrate and release certain chemical called the platelet factors which help in the clotting of blood.

Q. 7. Name a substances that prevent the blood coagulation in uninjured blood vessels ? How do they act ?

Ans. (i) The anticoagulant heparin prevent the blood from clotting.

(ii) The uninjured platelets don't form thromboplastin.

Q. 8. What is systemic circulation ?

Ans. The circulation of blood between heart and body is called systemic circulation.

The left ventricle pumps the oxygenated blood into aorta which gives off arteries to all parts of the body except lungs.

Q. 9. What are the causative factors of hypertension ?

Ans. (i) A diet full of extremely oily and greasy products, is known to increase cholesterol level, causing thickening of the arteries which result in high blood pressure.

(ii) Tobacco smoking also speeds up the heart rate, contracts blood vessels and raises blood pressure.

(iii) Mental tension is also one of the main cause of hypertension.

Q. 10. What is cardiac output ? [NCT-2007]

Ans. The amount of blood pumped by heart per minute is called cardiac output or heart output. Heart of normal person beats 72 times per minute and pumps out about 70 milli litres of blood per beat. Thus the cardiac output is 72×70 or 5040 milli litres per minute. i.e., about 5 litres per minute.

Q. 11. What is stroke volume ? How is it related to cardiac output ? (DDE 2017)

Ans. During cardiac cycle or one heart beat, the volume of blood pumped by the heart is called stroke volume. This is normally 70 ml. The amount of blood pumped by heart per minute is called cardiac output. It is the product of stroke volume and the number of heart beats.

Q. 12. Which portal system is present in man ? Write its two advantages.

Ans. Hepatic portal system is present in man. It has the following significance :

(i) The blood which comes from the alimentary canal contains digested food like glucose and amino acids. The excess of glucose is converted into glycogen which is stored in the liver for later use. When an individual feels deficiency of food, the glycogen is converted into glucose and is transferred to the blood stream via hepatic veins.

(ii) Harmful nitrogenous waste like ammonia is converted into urea which is later removed by kidneys. Thus the blood is detoxified (purified) of harmful nitrogenous waste.

Q. 13. Write a short note on pulmonary circulation.

Ans. (i) The flow of deoxygenated blood from the right ventricle to the lungs and the return of oxygenated blood from the lungs to the left atrium is called the pulmonary circulation.

(ii) The pulmonary trunk arises from the right ventricle and then divides into the right pulmonary artery and left pulmonary artery which supply deoxygenated blood to the right and left lung respectively.

(iii) Exchange of gases takes place in the lungs. Two pulmonary veins from each lung transport the oxygenated blood to the left atrium.

Q. 14. Define pulse rate. Describe the factors involved in maintaining the pulse pressure.

Ans. The number of times the heart beats in a minute is known as pulse rate. It has been observed that the pulse beats at the same rate as the heart beats. Hence the average pulse rate is 72 beats per minute. The factors involved in maintaining the pulse pressure are as follows:

(i) The amount of blood in the arteries.

(ii) The cardiac output.

(iii) The elasticity of the arterial walls.

(iv) The viscosity of the blood.