Human Body and Organ System

EXERCISE [PAGE 82]

Exercise | Q 1 | Page 82

Find out my partner.

Group 'A'	Group 'B'
1. Heart beats	a. 350 ml
2. RBC	b. 7.4
3 WBC	c. 37°C
4 Blood donation	d. 72
5 Normal body Temperature	e. 50-60 lakh/mm^3
6 pH of oxygenated blood	f. 5000-6000 per mm^3

Solution:

Group 'A'	Answer
1. Heart beats	d. 72
2. RBC	e. 50-60 lakh/mm^3
3 WBC	f. 5000-6000 per mm^3
4 Blood donation	a. 350 ml
5 Normal body Temperature	c. 37°C
6 pH of oxygenated blood	b. 7.4

Exercise | Q 2 | Page 82

Complete the following table.

Organ system	Organs	Functions
1. Respiratory		
2. Circulatory system		

Solution:

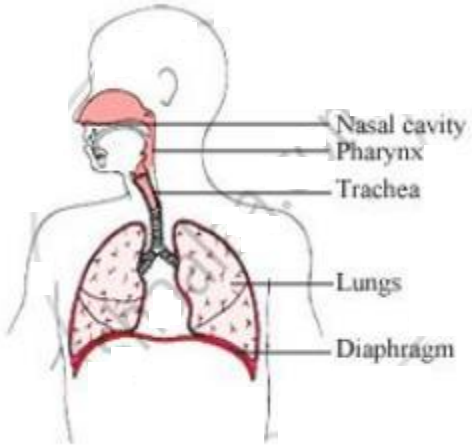
Organ system	Organs	Functions
1. Respiratory	Nose	Traps dust particles and microbes and prevents their entry in the respiratory system.
	Pharynx	Acts as a passage for the entry of air into the wind pipe.
	Wind pipe	Acts as a passage through which air passes into the lungs.
	Lungs	Exchange of gases occurs in lungs.
2. Circulatory system	Heart	The main organ from where circulation of blood to different body parts occurs.
	Blood vessels	Closed system of vessels which help in circulation of blood.

Exercise | Q 3.1 | Page 82

Draw neat and labeled diagram.

Respiratory system

Solution:

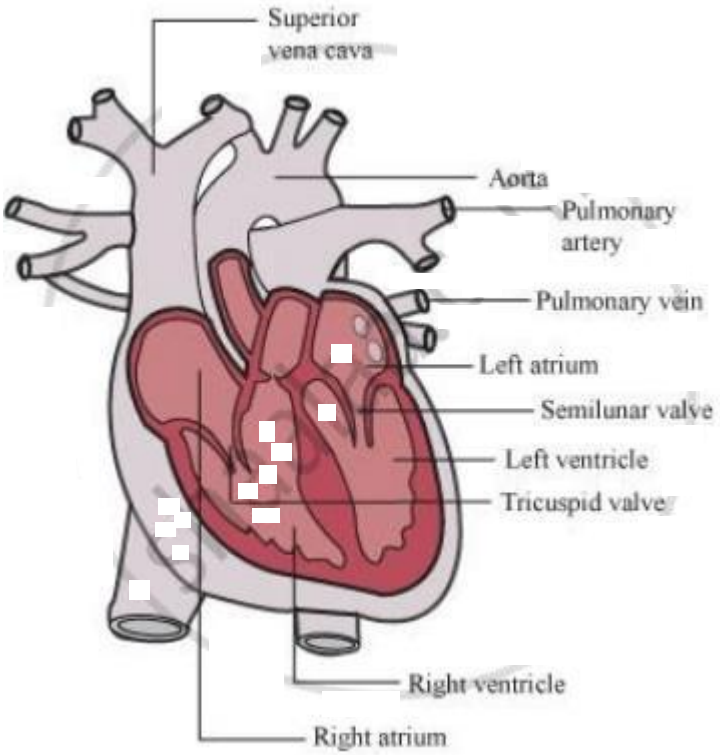


Exercise | Q 3.2 | Page 82

Draw neat and labeled diagram.

Internal structure of heart.

Solution:



Exercise | Q 4.1 | Page 82

Explain with reasons.

Human blood is red colured.

Solution: Human blood is red in colour due to the presence of the respiratory pigment haemoglobin. Haemoglobin is a pigment which is red in colour and thus imparts red colour to the blood.

Exercise | Q 4.2 | Page 82

Explain with reasons.

Upward and downward movement of diaphragm occurs consecutively.

Solution: Diaphragm is a muscular partition which is present between the thoracic cavity and abdominal cavity. During the process of breathing, the upward and downward movement of diaphragm occurs simultaneuosly. When we inhale, the ribs rise up while the diaphragm lowers down simulatenously causing a decrease in

pressure on lungs. This results in the moving of air into lungs through nose. As the ribs return to their original position, diaphragm rises up leading to the increase in pressure inside the lungs. This results in moving of the air outside the nose.

Exercise | Q 4.3 | Page 82

Explain with reasons.

Blood donation is considered to be superior of all donations.

Solution: Blood donation is considered superior of all donations because it can save someome's life. Most of the lives are lost due to blood loss during surgeries, accidents or cases where regular blood transfusion is required. These lives can be saved, if adequate amount of blood is available.

Exercise | Q 4.4 | Page 82

Explain with reasons.

person with 'O' blood group is considered as 'universal donor'

Solution: Person with 'O' blood group is considered as 'universal donor' because such an indivisual can donate blood to a person having any other blood group.

Exercise | Q 4.5 | Page 82

Explain with reasons

Food must have limited amount of salts.

Solution: Food must have limited amount of salts as we require limited amounts of these in our body. Excessive salts in food can lead to accumulation of water in different parts of the body such as arms, legs etc. and lead to edema. Too much salt leads to increase in the blood pressure as well.

Exercise | Q 5.1 | Page 82

Answer the follwing question in your own words.

Explain the functional correlation of circulatory system with respiratory, digestive and excretory system.

Solution: The functional corelation between circulatory system with respiratory, digestive and excretory system is as follows:

We already know that during respiration exchange of gases occurs in the lungs. The respiratory system causes the diffusion of oxygen into the blood and the diffusion of CO_2 out of the blood. The oxygen is then transported to cells of the body via the circulatory system.

The digestive system is responsible for producing nutrients by breaking complex molecules into simpler ones. The circulatory system then tranports these nutrients to different cells and tissues.
The excretory system is responsible for the elmination of waste products from the body. These waste products are transported by blood to the excretory system.

Exercise | Q 5.2 | Page 82

Answer the follwing question in your own words.

Explain the structure and function of human blood.

Solution: Blood is a fluid connective tissue that flows in blood vessels. It is composed of two components- plasma and blood cells.

Plasma is a yellowish colour fluid, made up of water (~90%) and some dissolved nutrients, proteins, hormones and waste products.

Blood consists of three types of blood cells. These are

i. Red Blood Cells: They contain a red pigment called haemoglobin, which transports oxygen to all body cells.

ii. White Blood Cells: They fight against germs that enter the body. Thus, they protect the body from diseases.

iii. Platelets: When we get injured, bleeding stops after some time. This happens because of the activity of platelets, which help in the clotting of blood.

Functions of blood:

- It transports nutrients and oxygen to the different parts of the body.
- It also carries waste materials (from the different parts of the body) to be removed by the excretory organs.
- Chemical messengers like hormones are transported by the blood.
- Protects the body from disease carrying germs.
- Helps to maintain a constant body temperature.

Exercise | Q 5.3 | Page 82

Answer the follwing question in your own words.

Explain the importance and need of blood donation.

Solution: Blood donation is one of the biggest donations of an inidivisual towards their society. Blood loss can occur under circumstances of accidents, during surgeries or in case of diseases which require blood transfusion. Adequate amount of available blood

can save many lives. It does not harm or effect the body of the donor and the amount of blood which is donated is recovered within 24 hrs.

This donated blood can be stored and used as and when the requirement arises.

Exercise | Q 6.1 | Page 82

Explain the differences.

Arteries and veins.

Solution:

Arteries	Veins
1. Carries blood towards organs and away from heart.	Carries blood towards heart and away from organs.
2. Carries fully oxygenated blood	Carries deoxygenated and CO_2 enriched blood.
3. Blood flows with high pressure and jerks,.	Blood flows with low pressure and smoothly.
4. Have no valves	Have valves to prevent backflow of blood.
5. Walls are elastic.	Walls are non-elastic.
6. Are Deeply placed.	Are superficial.
7 Branched and decreases in size.	Unites and increases in size
8. Can constrict and dilate	Cannot constrict.
9. Have thick and muscular walls	Have thin and less muscular walls.
10. Smallest artery is called arteriole	Smallest vein is called Venules.

Exercise | Q 6.2 | Page 82

Explain the differences.

External and internal respiration

Solution:

External respiration	Internal respiration
1. It occurs between the body and external environment.	It occurs at the cellular level.

2. It is a mechanical process.	It is a chemical process.
3. It can be both- voluntary and involuntary action.	It is only an involuntary action.

Exercise | Q 7 | Page 82

Which health parameters of blood donor should be checked?

Solution: The following parameters of blood donors have to be checked prior blood donation:

1. Age – There is a set age before which and after which blood donation can be done or not respectively.

2. Weight – Weight of individuals is also an important factor as underweight indivisuals are not allowed to donate blood. In underweight indivisuals, the likelihood of having a reaction such as dizziness and fainting following donation are higher.

3. Heart, lung, and blood disease – Donors are enquired about any prior history of heart, lung, or blood diseases. People with heart disease, heart valve conditions, irregular heartbeat, disease of the blood vessels in the brain, heart failure, and certain lung conditions may be excluded from blood donation. Certain blood diseases such as iron deficiency anemia or chronic leukemia may also lead to exclusion.

4. Other medical conditions – Any other medical condition such as diabetes, hypertension, hypotension, fever etc. are also checked before blood donation.

5. Recent surgery – People with recent surgery are not allowed for donating blood. However, after an year of surgery they can donate blood but only if healing is complete and they have resumed full activity.

6. Pregnancy – Women who are pregnant are not permitted to donate blood during pregnancy and for six weeks after the pregnancy ends.

Exercise | Q 8.1 | Page 82

Fill in the blanks using appropriant words given in the bracket.

RBCs of the blood conatin _____, an iron compound.

Solution: RBCs of the blood conatin **hemoglobin**, an iron compound.

Exercise | Q 8.2 | Page 82

Fill in the blanks using appropriant words.

_____ is present between thoracic and abdominal cavity.

Solution: Diaphragm is present between thoracic and abdominal cavity.

Exercise | Q 8.3 | Page 82

Fill in the blanks using appropriant words.

Cardiac muscles are _____

Solution: Cardiac muscles are **involuntary.**

Exercise | Q 8.4 | Page 82

Fill in the blanks using appropriant words

pH of oxygenated blood is _____.

Solution: pH of oxygenated blood is **alkaline**.

Exercise | Q 8.5 | Page 82

Fill in the blanks using appropriant words.

Production of RBCs occurs in_____

Solution: Production of RBCs occurs in **red bone marrow**.

Exercise | Q 9.1 | Page 82

Find odd one out.

A, O, K, AB, B.

Solution: K is the odd one out because it is an inorganic ion while rest of the four are types of blood groups.

Exercise | Q 9.2 | Page 82

Find odd one out.

Blood plasma, platelets, blood transfusion, blood corpuscles.

Solution: Blood transfusion is the odd one out because it is a techniques for transfer ing of blood from donor to repeient. Rest of the three are components of blood.

Exercise | Q 9.3 | Page 82

Find odd one out.

Trachea, alveoli, diaphragam, capillaries.

Solution: Capillaries are the odd one out because they are a part of the circulatory system while rest of the three are parts of the respiratory system.

Exercise | Q 9.4 | Page 82

Find odd one out.

Neutrophils, globulins, albumins, prothrombin.

Solution: Neutrophils are the odd one out because they are a type of blood cell. Rest of the three are components of the plasma.

Exercise | Q 10 | Page 82

Read the following paragraph and identify the disease.

Today, her child became one and half year old. However, that child does not seem to be healthy and happy. It was continuously crying and gradually becoming weak. It has shortness of breath. Its nails have become blue.

Solution: From the above mentioned symptoms, it seams like the child is suffering from some kind of respiratory disorder/circulatory disorder. He has problem in breathing and his nails have become blue which means there is low level or lack of oxygen circulating in the red blood cells. It is known as cyanosis.

It occurs when enough oxygen is not present in blood, thus making the skin or membrane below the skin turn purplish-blue.

Exercise | Q 11 | Page 82

Your neighboring uncle has been diagnosed with hypertension. what should he do to keep hsi blood pressure within normal range?

Solution: The following methods can be adopted to keep the blood pressure within normal range:

- loose the extra weight
- exercise or do yoga regularly
- eat a healthy balanced diet containing fruits and vegetables
- reduce the amount or salt in food
- avoid alcohol and smoking
- reduce the amount of stress by indulging in your favourite activities
- regular monitoring of blood pressure