PRISM WORLD

Std.: 8 (English) General Science

Chapter: 11

Q.1 Find the odd one out 4

1 Neutrophils, globulins, albumins, prothrombin.

Ans **Neutrophils -** They are a type of WBCs while remaining are the components of blood plasma.

2 Blood plasma, platelets, blood transfusion, blood corpuscles.

Ans **Blood transfusion -** It is a process of blood transfer while remaining are the components of blood.

3 A, O, K, AB, B.

Ans **K -** All others are types of blood group while K is not a blood group.

4 Trachea, alveoli, diaphragm, capillaries.

Ans **Capillaries -** They are part of circulatory system while others are parts of respiratory system.

Q.2 Match the pair 4

1

Column - A	Column - B
i. Normal body temperature	a. 6.75
ii. pH of oxygenated blood	b. 7.4
	c. 25° C
	d. 37° C

Ans

i. Normal body temperature	37° C
ii. pH of oxygenated blood	7.4

2

Column - A		Column - B	
1.	WBCs	a.	Protection
2.	Fibrinogen	b.	5000-10000 per mm^3
		c.	Clotting

Ans

i.	WBCs	5000-10000 per mm3 Protection
ii.	Fibrinogen	Clotting

3

Column - A	Column - B
i. RBC	a. 5000-6000 per blood mm^3
ii. Blood donation	b. 2.5 - 4 lakh per mm^3
	c. 90 -92 % water
	d. 50 – 60 lakh/mm^3

Ans

i. RBC	50 – 60 lakh/mm^3
ii. Blood donation	5000-6000 per blood mm^3

4

Column - A	Column - B
i. Heart beats	a. 62 mm of Hg
ii. Blood donation	b. 700ml
	c. 72
	d. 350ml

Ans

i. Heart beats	72
ii. Blood donation	350 ml

Q.3 **Name the following** **1**

1 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. What is the child suffering from?

Ans Asthma

Q.4 **Distinguish between** **4**

1 Arteries and veins

Ans

Arteries	Veins
i. Blood vessels which carry the blood away from heart are called as arteries.	i. Vessels carrying the blood towards the heart from various parts of body are called as veins.
ii. Their walls are thick.	ii. Their walls are thin.
iii. These are deeply located in the body..	iii. Most of the veins are superficially located in the body.
iv. These vessels do not have valves.	iv. These vessels are provided with valves.

2 External and internal respiration

Ans

External	Internal respiration
i. External respiration occurs through two steps- Inspiration and Expiration.	i. Internal respiration occurs only in single step in the Lungs.
ii. It occurs collectively with help of lungs, through nose.	ii. It occurs only in the lungs.
iii. Air is only taken in and blown out in the process.	iii. Exchange of gases between cells and tissue fluid takes place in this process.
iv. This process is not specific towards the gases.	iv. This process is specific to Oxygen which moves from blood into tissue fluid and carbon dioxide which moves from tissue fluid into blood.

Q.5 **Give scientific reasons** **8**

1 Human blood is red coloured.

Ans i. Human blood consists of 45% of Blood corpuscles in which Red Blood Corpuscles (RBCs) are very high in number, around 50 - 60 lakh RBCs in each cubic milimetre of blood.

ii. RBCs are red due presence of an iron compound which is red in colour, Haemoglobin which is necessary for oxygen transport.

iii. The remaining components of blood do not show any bright colour due to which only the colour RBCs can be observed clearly.

iv. And therefore, due to presence of RBCs in high amount, the colour of the blood appears as red.

2 Upward and downward movement of diaphragm occurs consecutively.

Ans i. Diaphragm is a muscular partition is present at the base of thoracic cage. It is present between the thoracic cavity and abdominal cavity.

ii. Simultaneous rising up of ribs and lowering of diaphragm causes the decrease in pressure on lungs. Due to this, air moves into the lungs through nose.

iii. When ribs return to their original position and diaphragm rises up, pressure on the lungs increases. Due to this, air moves out from it through nose.

iv. Therefore, Continuous upward and downward movement of diaphragm is necessary to bring about the breathing.

3 Person with blood group 'AB' is called as universal recipient.

Ans i. Person who received blood is a recipient.

ii. Person with blood group 'AB' can receive blood from person with any other blood group i.e O, A, B and AB. Thus, a person with blood group 'AB' is called as universal recipient.

4 Blood donation is considered to be superior of all donations.

Ans i. Loss of blood can occur due to number of reasons. Blood is required in various situations like accidents, bleeding, parturition, surgical operations, etc.

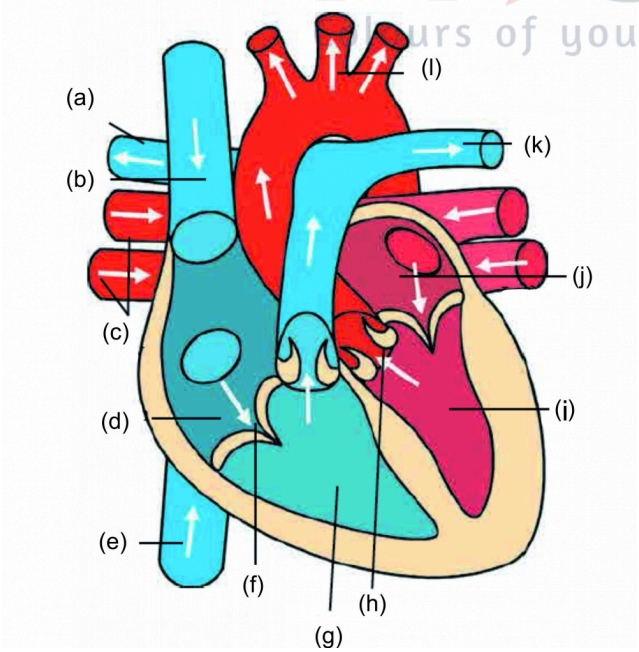
ii. Blood transfusion is performed only after the blood group matching. If it is done without matching, it may prove fatal for the patient.

iii. Person who donates the blood may be recipient in future. Blood donation without any expectation is always life saving.

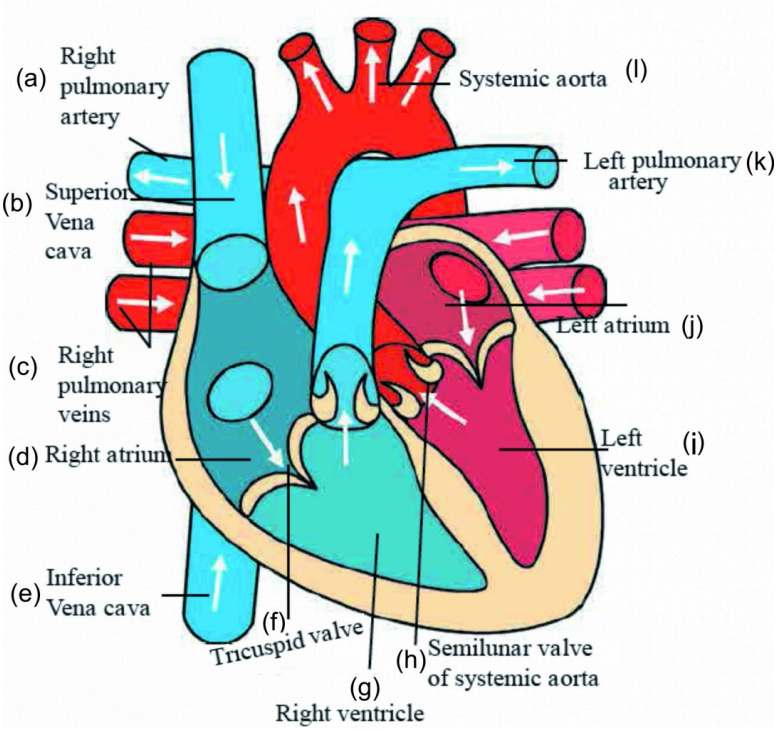
iv. Blood donated by healthy person is used to save the life of needful person. Hence, blood donation is considered as the best donation.

Q.6 **Activity based question (3 mks)** **6**

1 Label the diagram of structure of heart and blood circulation.



Ans



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

Ans i. Hight blood pressure increases the risk of heart attack. Making lifestyle adjustments is a key to maintain normal blood pressure.

ii. Blood pressure can be controlled in the following ways:

a. Eating a healthy diet: In order to manage blood pressure, one should limit the amount of salt in the diet and consume less fat containing food.

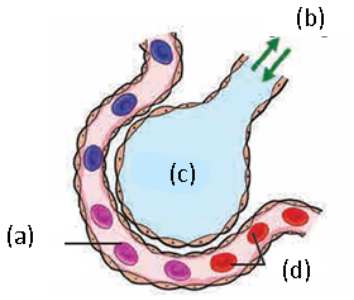
b. Regular exercise: Regular exercise can help in maintaining weight and lower the blood pressure. Also, brisk walking is beneficial.

c. Managing stress: Learning to manage stress can improve mental and physical health. It will help in controlling high blood pressure. Techniques like meditation, listening to music, etc., can help in managing the stress.

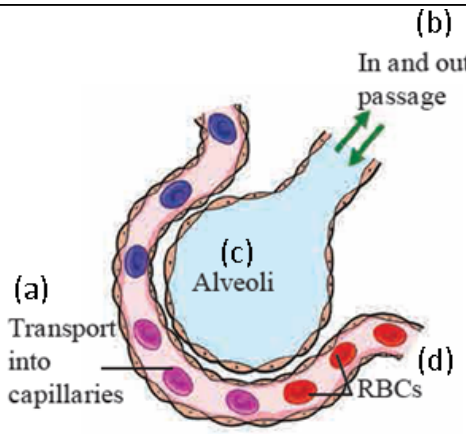
d. Avoiding alcohol and smoking: Both these habits can increase blood presure and the risk heart attack and stoke. Thus, they should be avoided.

Q.7 **Draw / Label the diagram** **2**

1 Human Respiratory System and Alveoli.



Ans



Q.8 **Complete the sentences in paragraph** **3**

1 Fill in the blanks using appropriate words given in the bracket.
(hemoglobin, alkaline, diaphragm, red bone marrow, acidic, voluntary, involuntary,)

i. RBCs of the blood contain ....., an iron compound.
ii. ..... is present between thoracic and abdominal cavity.
iii. Cardiac muscles are ..... .
iv. pH of oxygenated blood is ..... .
v. Production of RBCs occurs in ..... .

Ans
i. RBCs of the blood contain **hemoglobin**, an iron compound.
ii. **Diaphragm** present between thoracic and abdominal cavity.
iii. Cardiac muscles are **involuntary**
iv. pH of oxygenated blood is **alkaline.**
v. Production of RBCs occurs in **red bone marrow.**

Q.9 **Answer the following** **6**

1 Which health parameters of blood donor should be checked?

Ans The different parameters of blood donor that need to be checked are as follows:
i. **Illness**: The donor should not be suffering from any communicable disease.
ii. **Age**: The donor's age must be between 16 - 70 years.
iii. **Weight**: The donor's weight should be minimum 45kg.
iv. **Pulse**: The pulse rate should be 60-100 beats/min.
v. **Blood pressure**: The blood pressure of an individual should be near normal i.e., 120/80 mm Hg indicating that the donor is healthy.
vi. **Body temperature**: The body temperature should not exceed above 37.5˚C.

2 Explain the importance and need of blood donation.

Ans
i. Blood transfusion is needed in various situations like when a person meets with an accident, that results in heavy blood loss; during surgeries; in case of patients of anaemia, thalassemia, cancer and also after parturition (childbirth)
ii. Also, there is a constant need for regular blood supply as blood can only be stored for a limited time before use.
iii. Regular blood donations will ensure the availability of safe blood wherever and whenever needed.
iv. A person who donates blood may be a recipient in the future. Thus, blood donation must be done without any expectations.
v. Blood donated by a healthy person can save the life of a needful person. Hence, it is considered as the best donation.

Q.10 **Answer the following in detail** **15**

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

Ans
i. Circulatory system performs the function of transport of various substances like water, hormones, oxygen, soluble nutrients, and waste materials through different organs. It consists of heart, blood vessels and capillaries.
ii. Circulation is co-related with all other system in the body as it forms a connective link throughout the body.
iii. Respiration helps in intake of oxygen and release of carbon dioxide. The exchanges of gases occur

directly into the blood in the lungs.

iv. Also, cellular respiration occurs in the cells after the gases are transported by circulation.

v. Digestive system provides nutrients by digestion of the food which are absorbed by the blood and transported to all the tissues in the body.

vi. Excretory products are transported all by means of blood into excretory organs like kidney and blood is purified.

vii. Thus, circulatory system is correlated to all other organ systems such as respiratory, digestive and excretory system.

2 Explain the structure and function of human blood.

Ans **Structure of blood:**

i. Blood is a red coloured fuid connective tissue.

ii. The oxygenated blood is deep red coloured, salty to taste.

iii. The pH of bloods is 7.4 (slightly alkaline).

iv. Blood is composed of mainly two components- plasma and blood cells.

Plasma: Plasma is pale yellow coloured, clear and slightly alkaline fluid. It contains 90 - 92% water, 6 - 8% proteins and 1 - 2% inorganic salts and few other components.

1. Albumin is the most abundant protein in plasma. Albumins help in maintaining osmotic balance.
2. Globulins perform a very important role in fighting infections (protection)
3. Fibrinogen and prothrombin help in blood clotting process.
4. Inorganic ions like Ca, Na and K regulate the fuction of muscles and nerves.

Blood cells: The major types of blood cells are:

1. **Red Blood Corpuscles (RBCs) /Erythrocytes:** Thery are circular, small and enucleated cells (nucleus is absent). RBCs appear red coloured due to the presence of hemoglobin, an iron containing protein. Hemoglobin carries oxygen to the body tissues. There are around 50 to 60 lakh RBCs per mm^3 of blood. They are produced in the red bone marrow. The life span of RBCs on an average is 120 days.
2. **White Blood Cells (WBCs) / Leucocytes:** WBC are large, nucleated and colourless cells. 5000 - 10000 WBCs are present per mm^3 of blood. There are five types of WBCs present in blood - basophils, eosinophils, neutrophils, monocytes and lymphocytes. WBCs are formed the in red bone marrow. They serve a specific role in the human immune system. WBCs attack pathogens, fight infections and protect human body from various diseases.
3. **Platelets/Thrombocytes**: Platelets are extremely small and disc-shaped. About 2.5 - 4 lakh platelets are present per mm^3 of blood. They are involved in formation of blood clots in case of injury.

Function of blood:

i. **Transport of gases**: Oxygen is transported via blood from lungs to the body tissues and carbon dioxide from tissues to lungs.

ii. **Trasnport of nutrients**: Blood transports nutrients like glucose, amino acids, fatty acids obtained from the wall of alimentary canal to each cell of the body.

iii. **Transport of waste materials**: Nitrogenous wastes like ammonia, urea and creatinine are released by tissues into blood, which carries these waste materials to the kidney for excretion.

iv. **Protection**: Antibodies formed in the blood protect the body from microbes and other harmful particles.

v. Transport of enzymes and hormones: Enzymes and hormones are transported by blood from the site of their production to the target sites (organs/tissues) in the body.

vi. Thermoregulation: It regualtes normal body temperature (37˚C) by vasodilation (dilation of blood vessels) and vasoconstriction (narrow blood vessels).

vii. Maintenance of concentration of minerals like Na, K, etc. in the body.

viii. Platelets and fibrinogen protein present in the blood form a clot and seal the site of injury to prevent loss of blood by bleeding.

3

	Organ systems	**Organs**	**Functions**
i.	Respiratory system	.....	.....
ii.	Circulatory system	.....	.....

Ans

	Organ systems	**Organs**	**Functions**
i.	Respiratory	**Nose**	**Filters air with the help of hair and mucus**

	system		
		Pharynx	**It conducts air to the wind pipe**
		Wind pipe	**Allows passage of air into lungs**
		Lungs	**Carries out exchange of gases**
		Diaphragm	**It lowers and rises up helping in inhalation and exhalation of air**
ii.	Circulatory system	**Heart**	**It pumps blood throughout the body**
		Blood vessels	**It transports blood throughout the body**