# QB365 Important Questions - Body Fluids and Circulation

11th Standard CBSE

Biology

Reg.N

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Total Marks: 50

Time : 01:00:00 Hrs

Section-A	
1) Comment. Blood is called river of life.	1
2) Mention the total amount of normal leucocyte count in human?	1
3) A person has a blood group AB positive. What does it mean?	1
4) A cardiologist observed an elevated ST segment in the ECG of a patient. What is it indicative of?	1
5) It is said that arteries are more elastic and more contractile than veins. Comment	1
6) Give the location of septa in the heart.	1
7) Name the vessels that enter and leave the heart.	1
8) List the location of each of the valves of the heart.	1
9) Mention the stages of cardiac cycle.	1
10) Define systole and diastole.	1
Section-B	
11) Given below is the diagrammatic representation of a standard ECG.Label its different peaks.	2
P	
12) Write the differences between	2
(i) Open and closed system of circulation	
(ii) P-wave and T-wave	
13) Mention the phases of blood pressure, when are they seen?	2
14) Mention the causes of high blood pressure.	2
15) What happens to the mitral valve and the related blood flow during ventricular systole?	2
16) Explain heart sounds	2
17) Why is closed circulatory system more efficient than the open system?	2
18) Schematically represent double circulation.	2
19) What is the significance of hepatic portal system in the circulatory system?	2
20) An Rh <sup>-</sup> woman is carrying an Rh <sup>+</sup> foetus for the second time. Describe the consequences of Rh <sup>-</sup> incompatibility	2

Section-C

21) Answer the following	5
(i) Name the major site where RBCs are formed.	
(ii) Which part of heart is responsible for initiating and maintaining its rhythmic activity?	
(iii) What is specific in the heart of crocodiles among reptilians?	
22) Differentiate between right ventricle and left ventricle.	5
23) Explain different types of blood groups and donor compatibility making a table.	5
24) Describes the evolutionary change in the pattern of heart among the vertebrates.	5
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Section-A	
1)	1
It is called so, because blood plasma helps in transportation of biologically important materials for life	
processes like nutrients, gases, wastes, normones, etc., within the body, which is very essential for the survival of life.	
2) 6000 - 8000 per cubic mm is the normal leucocyte count in human.	1
3) AB positive means that a person has both A and B antigens and also has Rh factor in his blood.	1
4) An elevated ST segment in the ECG of a patient is indicative of acute myocardial infarction	1
5) It is so, because tunica media of an artery is formed of smooth muscle fibres and elastic fibres.	1
6) The septa(atrioventricular septa) is present between the right auricle-ventricle and left auricle-ventricle.	1
7) Superior and inferior vena cava enter the heart whereas aorta leaves the heart.	1
8)	1
The tricuspid valves are present between right atrium and ventricle.Bicuspid valves are between the wall	
of left atrium and left ventricle. The semilunar valves are present in the inner wall of aorta.	
9) Stages of cardiac cycle are joint diastolr-> atrial systole-> ventricular systole.	1
10)	1

Contraction of heart muscles brings right and left atria at systole and relaxation of heart muscles brings them at diastole.

# Section-B

11) The representation of a standard ECG diagram

(QRS) Depolarisation of ventricles (T) Ventricular repolarisation R (P) Atrial depolarisation

2

## 12) (ii) Differences between p-wave and t-wave is

	P-wave	T-wave	
	This ways represents the	This wave represents the	
	electrical excitation of the	return of the ventricles fro	
	atria which leads to the	excited to normal state. The	
contraction of both the atria	end of the T-wave marks th		
		end of systole.	

# 13) Phases of blood pressure are

(i) Systolic blood pressure It is seen during the contraction of left ventricle.

(ii) Diastolic blood pressure It is seen during the relaction of left ventricle.

## 14)

Causes of high blood pressure are as follows

(i) A diet full of oily and greasy products, incresse cholesterol level, which can cause thickening of the arteries due to which BP m,ay rise.

(ii) Tobacco smoking also speeds up the heart rate and contracys blood vessels.

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

15)

At the start of the ventricular systole, the mitral valve closes to prevent the flow of blood back into the atrium. As systole continues, blood from the right ventricle enters the pulmonary artery and blood from the left ventricle enters the aorta.

#### 16)

We can hear with a stethoscope, the two main heart sounds(i.e., lubb and dupp), which repeat rythmically. These sounds result from the closure of the heart valves. The first sound (lubb), which is of longer duration (0.16-0.90 s) and a louder one is created by the closure of the atrioventricular valves immediately after the start of the ventricular systole. The second sound is of shorter duration (0.10 s) and is created by the closure of the ventricular systole.

17)

The closed circulatory system considerably enhances the speed, precision and efficiency of circulation. The blood flows far more rapidly, it takes less time to circulate through the closed system and return to the heart. This fastens the supply and removal of materials to and from the tissues by the blood.

# 18) Flowchart of double circulation



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A unique vascular connection exists between the digestive tract and liver called hepatic poratal system. The hepatic portal vein carries blood from intestine to the liver before it is delivered to the systemic circulation. This ensures that the liver, which has the metabolic versatility to interconvert various organic molecules has first access to nutrients after the food is digested.

#### 20)

Rh-antigen is present on the surface of erythrocytes in about 80-85% of the human beings. The individuals, who possess this antigen are called Rh<sup>+</sup> (Rh positive) and those, who do not have it are called Rh<sup>-</sup> (Rh negative). A person when exposed to Rh<sup>+</sup> blood, develops anti Rh-antibodies. A pregnant women who is Rh<sup>-</sup>, if bears an Rh<sup>+</sup> foetus, will develop anti-Rh-antibodies during the first delivery, when the foetal blood comes in contact with her blood. These antibodies linger in the blood for sufficiently longer periods. If she carries a second foetus, that is Rh<sup>+</sup>, the anti-Rh-antibodies in her blood enter the foetal circulation and cause damage to the foetal RBCs. This, could become fatal. This condition is called erythroblastosis foetalis.

# Section-C

21) (i) Bone marrow

(ii) Sinoatrial node (SA node)

(iii) Reptiles have three-chambered heart except crocodile, which has four-chambered heart.

22) Differences between right ventricle and left ventricle

Right Ventricle	Left Ventricle	
Pight ventricle is smaller	Left ventricle is	
than the left ventricle	comparatively larger	
	than right ventricle	
Moderator band is present	Moderator band lacks	
Columnae carneae thicker,	Columnae carneae narrower,	
but less intricate.	but more intricate	
Receives and pushes	Receives and numps ovvgenated blood	
deoxygenated blood	Receives and pumps oxygenated blood	
Crescent-shaped	Biconvex in shape.	
The wall of right ventricle is thinner than left ventricle	The wall of it is thicker than	
	right ventricle.	

2

5

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Two groupings, i.e., the ABO and Rh<sup>-</sup> are widely used all over the world. ABO grouping is based on the presence or absence of two surface antigens (chemicals that can induce immune response) on the RBCs, i.e., A and B. Similarly, the plasma of different individuals contain two natural antibodies (proteins produced in response to antigens).

# **Blood Groups and Donor Compatibility**

Blood Group	Antigen on RCBs	Antibody in Plasma	Donor's Group
A	A	Anti-B	A, O
В	В	Anti-A	В, О
AB	А, В	Nil	AB, A, B, O
0	Nil	Anti- A, B	0

From the above mentioned table it is evident that group 'O' blood can be donated to persons with any other blood group and hence 'O' group individuals are called 'universal donors'. Persons with 'AB' group can accept blood from persons with AB as well as the other groups of blood. Therefore, such persons are called 'universal recipients'.

#### 24)

The heart among the vertebrates shows different patterns of evolution. Different groups of animals have evolved different methods for this transport. All vertebrates possess a muscular chambered heart. (i) Fishes have a two-chambered heart with an atrium and a ventricle. The heart pumps out deoxygenated by the gills and supplied to the body parts from where deoxygenated blood is returned to the heart. (ii) Amphibians and the reptiles have a three-chambered heart with two atria and a single from other body parts. However, they get mixed up in the single ventricle which pumps out mixed blood. (iii) Crocodiles, birds and mammals possess a four-chambered heart with two atria and two ventricles.The ventricles pump it out without any mixing uo, i.e., two separate circulatory pathways are present in these organisms, hence, these animals have double circulation