This is a Class 1 exam

Lebanon Evangelical School
for Boys and Girls
Loueizeh - Baabda

Mock Exams : Pt1

9, 10, 11 MAY022

Do NOT write in this box. Your MARK will be placed here.

Subject :	Biology	
Class :	9B and 9C	
Teacher :	Christine Khalil	
Duration :	1 hour	
Please write your answers on a separate sheet of paper.		
Your name :		*Time taken to complete exam*
Your Class :		
Exam Room :		
How many sheets, including cover sheet :		

- Do not open this paper until the teacher in charge instructs you to do so.
- The most important thing to remember in taking an exam is NEVER PANIC.
- If you are caught cheating in this exam, you will be awarded zero for ALL exams that are taken on this day.

Good presentation and handwriting (1 point)

Exercise 1 (8 points)

Indicate the right statement (s) and correct the false one (s).

a. Our cells use nutrients to liberate energy and produce new molecules.

b. The contraction of the esophagus permits the progression of food towards the stomach.

c. Bile facilitates the digestion of proteins by emulsifying it.

d. The sigmoid valves prevent the back flow of blood into the ventricles.

e. During diastole, the myocardium contracts.

f. During ventricular systole, blood is pumped from the ventricles into the veins.

g. During auricular systole, the tricuspid and bicuspid valves are closed.

h. The combination of hemoglobin and oxygen is irreversible.

Exercise 2 (10 points)

In order to verify that enzymes are specific, an experiment of digestion of proteins is made by a group of students of grade 9. In this experiment, the content of the test tubes and the result of each tube are given in the table below. The two tubes are put under a temperature of 37°C, at pH =7 and left for 1 hour.

Tube	Content	Result
A	Piece of meat and water	The piece of meat remains the same
B	Piece of meat, water and saliva	The piece of meat remains the same

Document 1

1.a. Name tube A. (1)

b. Formulate the hypothesis tested in this exercise. (1)

After one hour, the biuret test is made for the two tubes, the obtained color is blue for both.

2. Justify the results of the biuret test mentioned above for each of the two tubes. (2)

One of the students decides to change some conditions of the experiment in tube B in order to digest the meat.

3. Indicate the changes made by this student in order to digest the meat. (2)

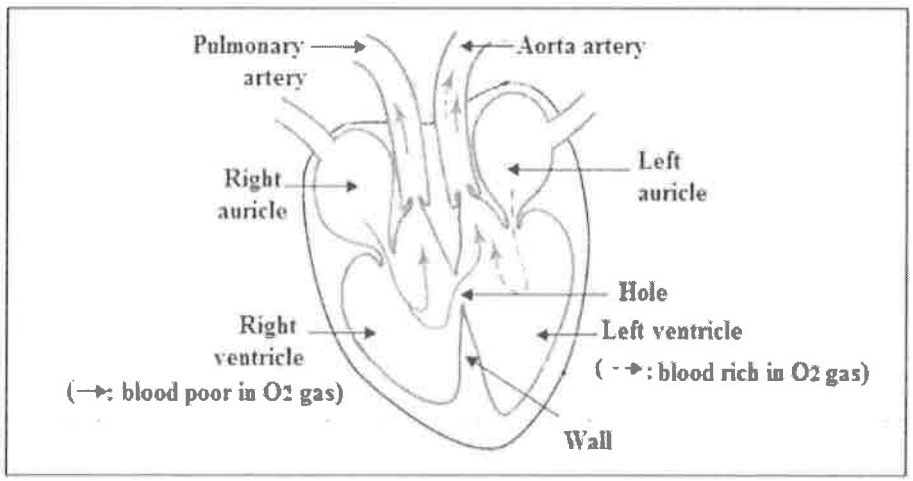
4. Schematize the digestion of the meat. (2)

A second student concluded starting from this experiment that the meat is not subject to any digestion in the mouth, a third one said that the meat is submitted in the mouth to a digestion that does not need enzymes.

5. Name the type of digestion indicated by the third student and specify its role. (2)

Exercise 3 (4 points)

Certain children show the following signs: bluish lips, accelerated respiration, lack of energy… In these children, the heart shows the presence of a hole in the wall between the right ventricle and the left ventricle. The document below shows the sense of direction of the passage of blood in the heart of a child affected by this abnormality.



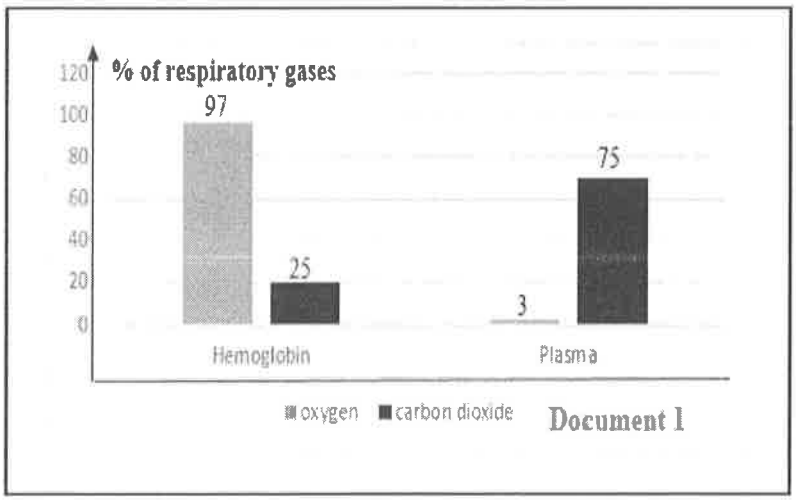
1. Indicate, by referring to the document, the pathway of blood leaving the right auricle towards the arteries. (1.5)

2. Specify, by referring to the document, if the blood leaving the aorta artery becomes poorer or richer in oxygen gas than the blood in the left auricle. (1)

3. Explain why those children, affected by this abnormality, have a lack of energy. (1.5)

Exercise 4 (7 points)

A. Document 1 represents the percentages of oxygen and carbon dioxide gases transported by hemoglobin and plasma in the blood.



Document 1

1. Compare the percentages of respiratory gases transported by plasma and by hemoglobin. (2)

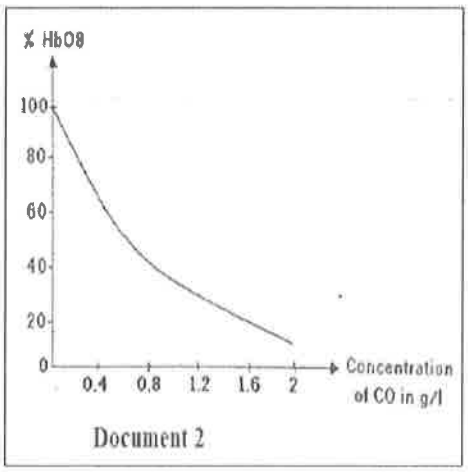
2. Represent, in the same table, the percentages of respiratory gases carried by hemoglobin and plasma. (2)

B. Smoking leads to the inhaling of a toxic gas named carbon monoxide (CO). In order to understand the effect of CO gas in the blood on the transport of oxygen gas by hemoglobin, the following measurement was obtained in document 2.

3. a. Analyze the graph in document 2. (1)

   b. Draw out a conclusion concerning the action of CO gas on hemoglobin. (1)

4. Explain why CO is considered as a toxic gas. (1)



Document 2

Answer Key for 9BC Mocks Pt1

Good presentation and Handwriting (1)

Exercise 1 (8 points)

a. True (1)

b. True (1)

c. False. Bile facilitates the digestion of lipids by emulsifying it. (1)

d. True. (1)

e. False. During diastole, the myocardium relaxes OR during systole, the myocardium contracts. (1)

f. False. During ventricular systole, blood is pumped from the ventricles into the arteries. (1)

g. False. During auricular systole, the tricuspid and bicuspid valves are open. OR during ventricular systole, the tricuspid and bicuspid vales are closed. (1)

h. False. The combination of hemoglobin and oxygen is reversible. (1)

Exercise 2 (10 points)

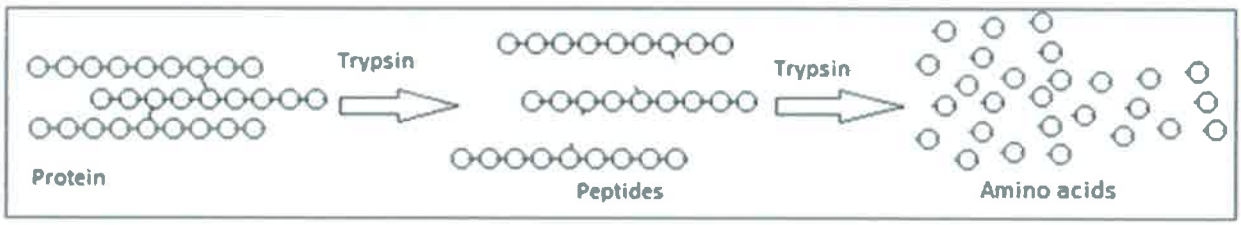
1. a. Control tube. (1)

   b. Hypothesis: or I hypothesize that enzymes are specific. (1)

2. In tube A, there is no digestion because there are no enzymes. In tube B, the enzyme is amylase, it is not specific for the digestion of the proteins, so the digestion does not occur. (2)

3. Change of the saliva with gastric juice/pepsine, the pH from 7 to 2, or change the saliva by the trypsin and the pH to 8. (2)

4. Schematic representation showing the molecular simplification of meat (a protein) by trypsin.



(2)

5. Mechanical Digestion, reduce the size of the meat to facilitate chemical digestion. (2)

Exercise 3 (4 points)

1. The blood passes from the right auricle to the right ventricle. Part of it continues through the pulmonary artery and another part passes to the left ventricle then through the aorta artery. (1.5)

2. The blood leaving the aorta artery becomes poorer in oxygen gas then the blood in the left auricle because it is receiving blood rich in oxygen coming from the left ventricle mixed with the blood poor in oxygen gas coming from the right ventricle. (1)

3. The cells need oxygen gas to produce energy. Then, in those children having this abnormality, the blood leaving the aorta is poor in oxygen gas, so the quantity of oxygen gas received by the cells decreases resulting in less production of energy through the oxidation reaction. (1.5)

Exercise 4 (7 points)

1. The percentage of oxygen gas carried by hemoglobin is 97% which is higher than the percentage of carbon dioxide gas carried by hemoglobin (25%). (1)

On the other hand, the percentage of oxygen gas carried by the plasma is 3% which is lower than the percentage of carbon dioxide gas carried by plasma (75%). (1)

2. Table showing the percentage of respiratory gases carried by hemoglobin and plasma (2)

Percentage of respiratory gases (%)

	Oxygen	Carbon dioxide
Hemoglobin	97	25
Plasma	3	75

3. a. The percentage of HbO8 decreases from 100% till 10% as the concentration of CO increases from 0 to 2 g/l. (1)

b. The carbon monoxide fixed by hemoglobin reduces the transport of oxygen gas by hemoglobin. (1)

4. Carbon monoxide fixes on hemoglobin in an irreversible way leaving no place for oxygen gas to be fixed on and transported by hemoglobin. Hemoglobin will then not be able to deliver the proper amount of oxygen gas to the cells and organs leading to less function and their death. Eventually, intoxication by carbon monoxide leads to death by suffocation. (1)