Exercise I: (3 pts)

Answer briefly the questions that follow.

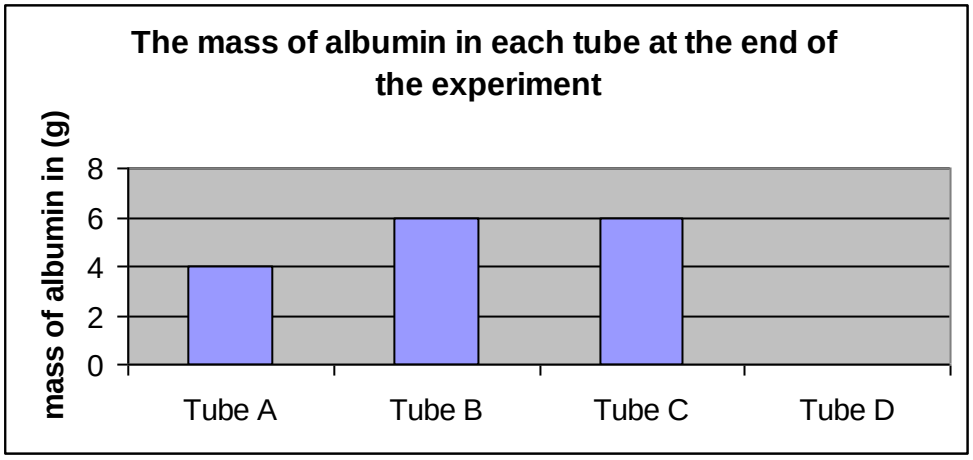
1- Name the product(s) of digestion of lipids.
2- Give the name of the product obtained when a protein is digested by tripsin.
3- Distinguish between the role of bile and lipase in lipids digestion.
4- How can we prove that a given medium contains glucose and not other reducing sugar?

Exercise II: (9.5 pts)

A- In order to study the in vitro digestion of albumin (a protein in egg white) by pepsin, the following experiment is performed:
4 test tubes are put at 37^0C and containing respectively:

Tube A: 6g of albumin + water + pepsin; pH=6
Tube B: 6g of albumin + water + pepsin; pH=7
Tube C: 6g of albumin + water + pepsin; pH=9
Tube D: 6g of albumin + water + pepsin; pH=2

After one hour the quantity of albumin in each tube is measured. The results are shown in the following histogram.



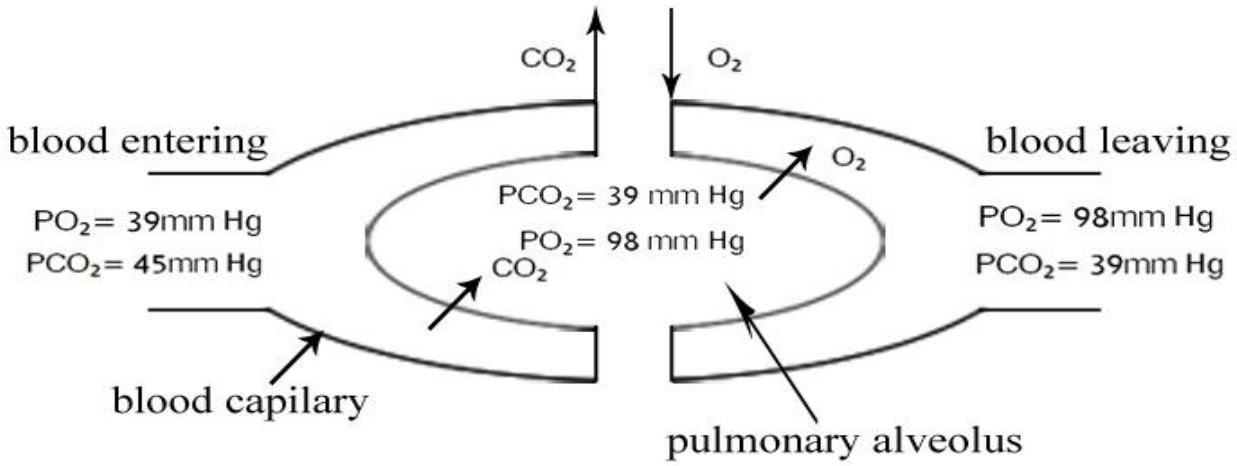
1- Make a table showing the different experimental conditions and the results obtained.
2- What hypothesis is being verified in this experiment?
3- Interpret the obtained results.
4- Indicate the substance obtained from the digestion of albumin by pepsin.

B- The digestive juice in the stomach contains hydrochloric acid and the enzyme pepsin. The cells of the stomach are protected against the acid and pepsin by the mucus secreted by some cells of the stomach. Most ulcers, which are irritations and inflammations of the stomach wall, are caused by a kind of bacteria that produces substances which decrease the amount of mucus. Thus the stomach lining is being in direct contact with hydrochloric acid.
Churned food lives the stomach to the small intestine where digestion is completed. After that the nutrients pass through the walls of the small intestine to blood or lymph.

1- People usually say: "Stomach ulcers are due to abundant secretion of acid that burns the stomach wall and create a hole in it". Justify whether this statement is true or no by referring to the text.
2- Give the name of the phenomenon that takes place specifically in the small intestine.
3- Indicate the structure of the small intestine where this phenomenon takes place.
4- List the characteristics of the small intestine that favor this phenomenon.
5- Which route (the blood or the lymph) does the product of digestion of albumin by pepsin travel? Justify your answer.

Exercise III: (7.5 pts)

The document below shows the respiratory gaseous exchanges that take place at the level of lungs.



1- Name the level(s) where gaseous exchanges take place in human.
2- Make a table that shows the pressures of oxygen and carbon dioxyde in the blood entering and leaving the lungs.
3- Compare the pressures of oxygen and carbon dioxyde in the blood entering with that in the lungs. Deduce the direction in which these gases pass.
4- Specify the form(s) of the transported oxygen in the blood.
5- Determine the color of the blood entering the lungs.