KIBOGA PROGRESSIVE S.S

END OF TERM ASSESSMENT 2023

DEPARTMENT OF BIOLOGY SENIOR THREE

BIOLOGY P1 (THEORY)

1hour 45minutes.

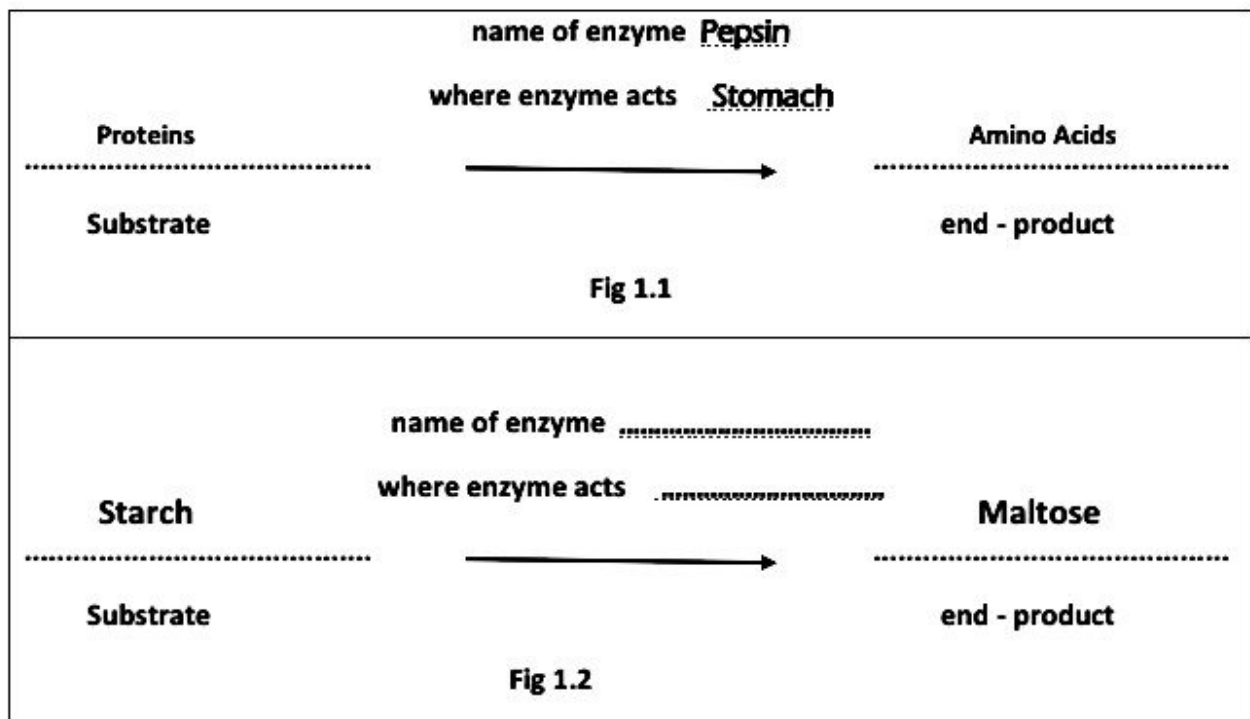Name………………………………………………………………………………………SIGNATURE………………

- **This paper consists of two sections A and B. All questions in section A are compulsory**
- **For section B attempt only ONE question**

SECTION A (40 marks)

1. Digestion in the human digestive system is carried out by the action of enzymes.

   (a) The diagrams each represent the action of a specific enzyme to break down a substrate into one or more end products.

Fig. 1.1 has been completed for you.   Complete Fig. 1.2 and Fig. 1.3 [6]

name of enzyme **Pepsin**

where enzyme acts   **Stomach**

Proteins		Amino Acids
....	⟶	....
Substrate		end - product

Fig 1.1

name of enzyme ....

where enzyme acts   ....

Starch		Maltose
....	⟶	....
Substrate		end - product

Fig 1.2

munyagwaharuna3@gmail.com

name of enzyme **Lipase**

where enzyme acts ....

....

Substrate

$\longrightarrow$

....

....

end - products

Fig 1.3
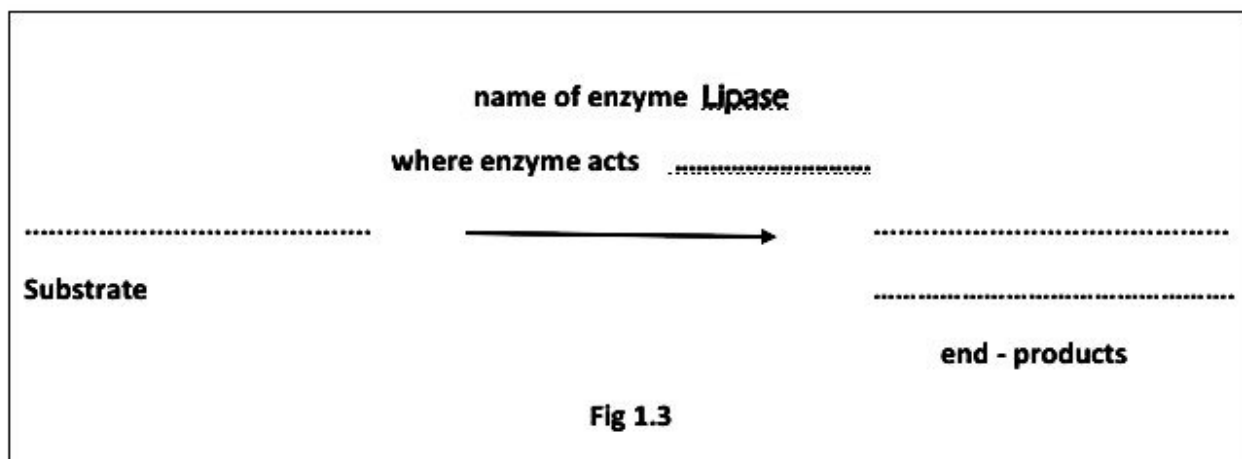
(b) Amino acids are the end products of protein digestion.   Describe what happens to these amino acids after digestion until they reach the liver.

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.... **[4]**

2. Plants need light for photosynthesis. Part of the photosynthesis equation is shown below.

.... + Carbon dioxide $\longrightarrow$ Glucose + ...

(a) Which of the following would complete the photosynthesis equation? **[1]**

	Reactant	Product
☐	Water	chlorophyll
☐	Chlorophyll	Oxygen
☐	Water	Oxygen
☐	Oxygen	Water

A scientist investigates the effect of light intensity on photosynthesis. He sets up the equipment shown in Figure 2.

Figure 2
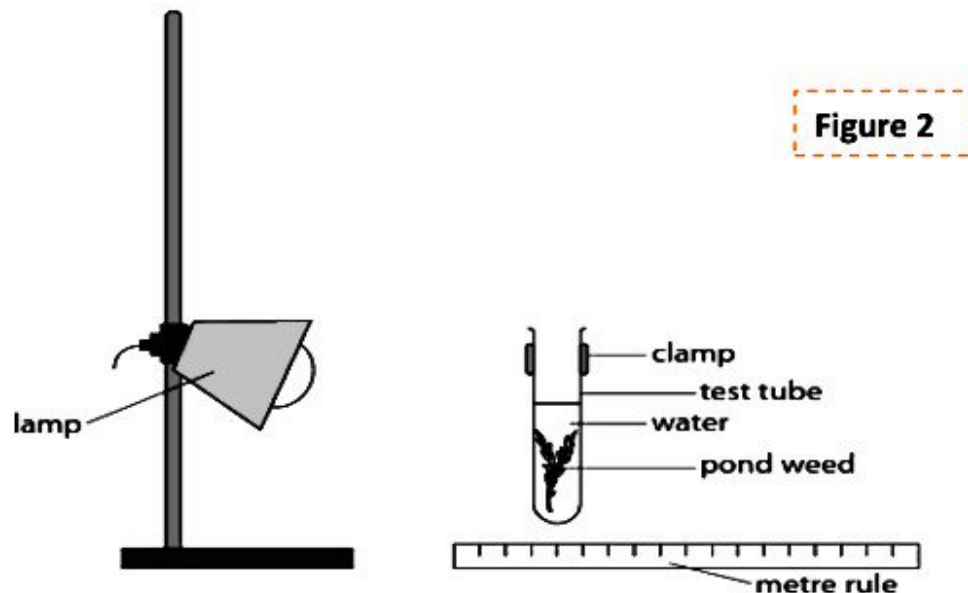
He places the lamp 10cm from the test tube and records the number of bubbles produced in five minutes.

He repeats the procedure with the lamp at a distance of 20cm and 30cm away from the test tube.

The scientist wants to repeat his investigation at each distance.

(b) (i) State three variables that should be kept constant to improve the results. [3]

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The scientist noticed that the temperature of water near the light increased.

(ii) Give one improvement the scientist could make to reduce the effect of this increase in temperature. [1]

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(c) Figure 3 shows the results of the investigation.

distance (cm)	number of bubbles counted			
	test 1	test 2	test 3	mean
10	42	37	44	41
20	23	24	22	
30	10	11	12	11

(i) Calculate the mean result for a distance of 20cm. [2]

(ii) Give a detailed conclusion about the effect of light intensity on photosynthesis. [3]

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3. Figure 4 shows a diagram of the heart.

bicuspid valve

Figure 4
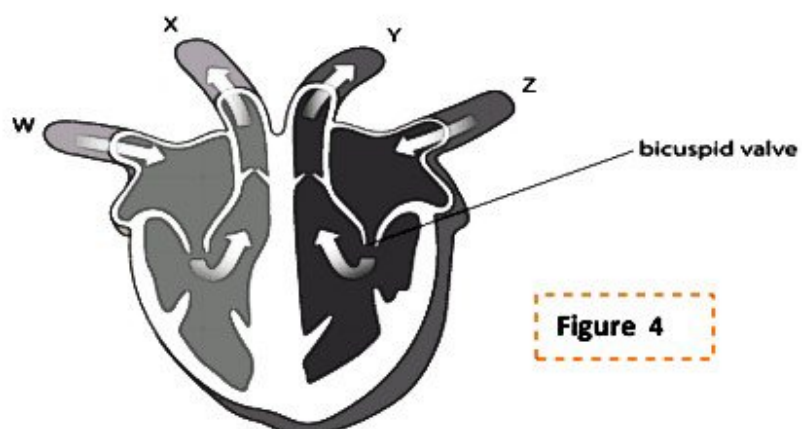
(a) (i) Vessel X takes   [1]

☐ deoxygenated blood to the body

☐ deoxygenated blood to the lungs

☐ oxygenated blood to the body

☐ oxygenated blood to the lungs

(ii) Give one reason why the wall of the left ventricle is thicker than the right. [1]

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Valves in the human heart may become damaged and no longer function.

(iii) Describe what would happen to the flow of blood in the left side of the heart if the bicuspid valve did not function effectively.   (3)

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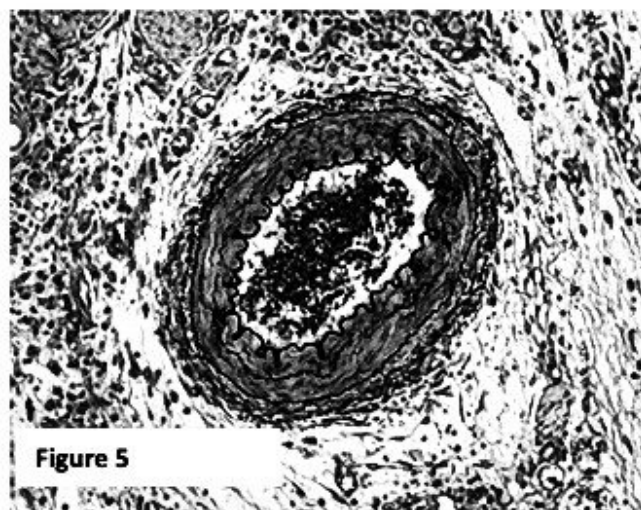
Figure 5 shows a photomicrograph of a blood vessel.

Figure 5

(Source: Microscape/Science Photo Library)

(b) Explain how the structure of this blood vessel is related to its function. (2)

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gill capillaries

ventricle

atrium

Figure 6

other capillaries
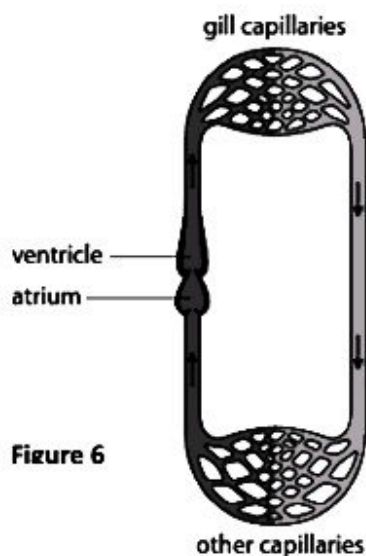
Figure 6 shows a diagram of the circulatory system of a fish.

c) Descibe the differences between the structure of the circulatory system of a fish and the human circulatory system [3]

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4. Scientists can measure how much water is lost by the leaves of a plant.

(a) (i) What is the movement of water molecules from an area with a low solute concentration to an area with a high solute concentration called? (1)

☐ Active Transport ☐ Diffusion ☐ Osmosis ☐ Transpiration

(ii) What structure transports water through the stem of the plant?(1)

☐ Guard Cell ☐ Phloem ☐ Stomata ☐ Xylem

(b) A scientist measured the rate of water loss from a plant shoot using a potometer. Figure 7 shows the equipment used in the experiment.
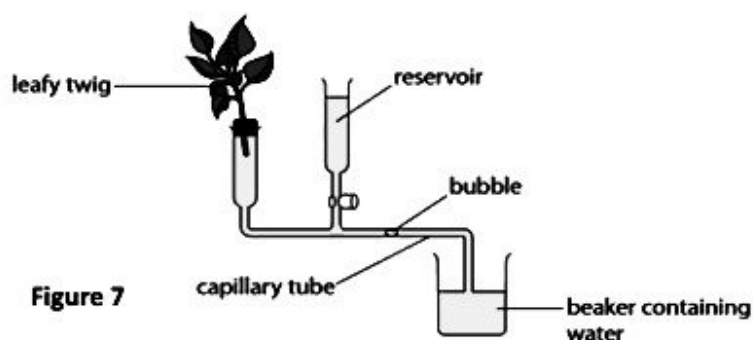
Figure 7

The volume of water lost from the plant can be calculated by measuring the distance a bubble moves along the capillary tubing.

(i) Calculate the rate of water loss from the plant in mm³/s if the volume of water lost was 12 mm³ in 10 minutes.   (3)

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(ii) Explain how the water loss would change if the plant only had one leaf. (2)

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The scientist wants to extend the investigation by considering other factors that affect transpiration rate.

(iii) State three variables, other than temperature, that she could investigate.   (3)

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SECTION B [10 MARKS]

Scenario ; Research shows that there is an increase in the number of Ugandans with Non – Communicable diseases andf this is estimated to be be costing the government billions oif Tax payers money .

Task : As the new Health Officer at Kiboga District, write an article to the print media to sensitize the people of Kiboga about the causes, effects and ways of preventing Coronary Heart diseases.

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