



1. Dissect specimen  $S_1$  in the usual way to display the digestive system. Pin the alimentary canal to your right-hand side.

(a) Draw a large diagram of the dissection.

(i) Label on the diagram the organs of the fore and hind gut.

(ii) Using letters A to E, label on the diagram the organs/structures responsible for the functions listed below.

<u>Label</u>	<u>Function</u>
A	secretion of saliva
B	increasing the surface area for absorption.
C	excretion
D	temporary storage of faeces.
E	secretion of proteases, lipase and carbohydrases

(b) (i) What is the other function of structure D?

(ii) What structure is possessed by E that protects it from abrasion by undigestible particles?

(c) LEAVE YOUR DISSECTION PROPERLY DISPLAYED FOR ASSESSMENT (20 MARKS)

2. Design and carry out experiments to identify solutions  $A_1$ ,  $A_2$ ,  $A_3$ ,  $A_4$ ,  $A_5$ , and  $A_6$  each of which contains only one pure food substance. The pure food substances contained in these solutions are glucose, sucrose, starch and protein.

Use only the following reagents in your experiments.

- Benedict's solution
- Dilute hydrochloric acid
- Dilute sodium hydroxide solution
- 1% Copper (II) sulphate (VI) solution
- Your own saliva collected after properly rinsing your mouth.

(a) Record your work in form of a table as shown below (Table 1).

Table 1

Food substance tested	Procedure	Observations	Inferences

(b) Why were you told to rinse your mouth properly before collecting saliva?

- (c) Justify the use of saliva in your experiment.
- (d) For each pure food substance mention one natural plant source and one main function in the organism in which it occurs. Tabulate your answer as shown in table 2 below.

Table 2

Name of pure substance	Natural plant source	Main function
Glucose		
Sucrose		
Starch		
Protein		

(15 MARKS)

3. Observe carefully specimens S<sub>2</sub>, S<sub>3</sub>, S<sub>4</sub>, S<sub>5</sub>, S<sub>6</sub>, S<sub>7</sub>, S<sub>8</sub> and S<sub>9</sub>. You may cut transverse sections (T.S.) or longitudinal sections (L.S.) of some of the specimens to obtain sufficient information to enable you answer this question satisfactorily.
- (a) Cut a transverse section (T.S) of S<sub>9</sub>. Observe the cut surface. Draw and label.
- (b) Determine the placentation of specimen S<sub>7</sub>. Draw and label.
- (c) Construct a simple numbered dichotomous key that can be used to identify specimens S<sub>2</sub> to S<sub>9</sub>. Base your key mainly on FRUIT WALL characteristics. (15 MARKS)