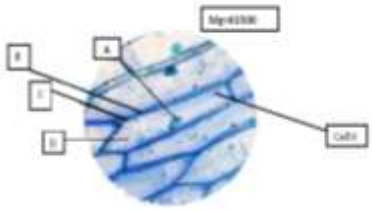
KAPSABET HIGH SCHOOL

1.You are provided with the photomicrograph of an onion outer epidermis as seen under light microscope



a) On the photograph, name parts labelled A, C, and D
(3marks)
A ***chloroplast ;***
C ***cell membrane ;***
D ***cytoplasm ;***

a) Explain how the part **labelled B** is adapted to its function **(2marks)**

Cell wall contain the polysaccharide cellulose; that give mechanical support

b) Calculate the actual size of the cell **marked K**, give your answer in micrometres **(2marks)**

Mg = $\frac{\textit{image size}}{\textit{Actual size}}$

$1500 = \frac{4.4\times10{,}000\ ;}{\textit{Actual size}}$

$= \frac{44000}{1500}$

$= 29.3um\ ;\ units$

c) The differences between the cells in the photograph and those obtained from an animal epithelial cells **(3marks)**

Onion epidermal cells	Animal epithelial cells
Cell wall present	*Cell wall absent ;*
Chloroplast present	*Chloroplast absent ;*
Nucleus located at the periphery	*Centralised nucleus ;*

d) State the process that make the structures in the cell above appear more distinct **(1mark)**
Staining ;

e) In microscopic procedure in 1 (e) above name what was used to achieve the process **(1mark)**
Iodine stain,;methylene blue ;eosin accept any one

2. The photographs below represent specimen labeled A, B, C and D

SPECIMEN A	SPECIMEN B
	
SPECIMEN C	**SPECIMEN D**
	

i) Name the type of placentation shown in specimen A and B **(2 marks)**

A ***Axile;***

B ***free central;***

ii) Identify the type of sections from which specimen **C** and D was obtained? **(2 marks)**

C cross section/transverse section;

D. Longitudinal section;

iii) Classify the above specimen labeled D **(1mark)**

Succulent;

iv) You are provided with specimen labeled **D1, D2, D3** and **D4**. Examine them Draw and label specimen labeled **D2** **(3marks)**

v) Giving a reason and state the agent of dispersal of the specimen **(6marks)**

Specimen	Agent of dispersal	Reason
D1	***Animal ;***	*Have hook-like structures which stick on fur/clothes of passing animals;*
D3	***Wind;***	*Has wing like structures to increase surface area for it to be carried by wind;*
D4	***Animal ;***	***Brightly coloured, succulent to attract animals that feed on it;***

3. You are provided with the following. Solution P, Q and Z.

(a) (i) Put 2 cm3 of solution P into two test tubes labeled A and B. Add iodine solution drops into test tube A. Observe and record. **(1 mark)**

Blue-black colour observed;

(ii)To test tube B, add an equal amount of Benedict's solution. Heat to boil. Record your observation. **(1 mark)**

Blue-black of Benedict's solution persist;

(iii) From the results in (a) (i) and (ii), Identify solution P**.** **(1 mark)**

Starch solution;

(iv) put 2cm3 of solution Z into a clean test tube labelled C. Add equal volume of Benedicts solution. Heat to boil. **(1 mark)**

Blue colour of Benedict's solution persist;

(v) Open the visking tubing provided. Pour solution P into the visking tubing and add 1cm3 of the solution R. Tie the visking tubing and ensure there is no leakage. Pour solution Z into a clean beaker till it is half full. Immerse visking tube in the solution Z in the beaker. Allow it to stand for 30 minutes. After 30 minutes, take 2cm3 of solution Z from the beaker into a clean test tube labelled D. Add equal amount of Benedict's solution. Heat to boil. Record your observation. **(1 mark)**

Colour changes from Blue-green- yellow- orange;

(vi)Account for the observation made in (v) above. **(3 marks)**

Starch is hydrolysed into maltose by enzyme diastase; maltose molecules are small enough to diffuse through the small pores of the visking tubing; maltose reacted with Benedict's solution producing an orange colour;

(b) (i)Pour 2 cm3 of solution Q into a clean test tube. Observe and record the color of solution Q. **(1 mark)**

White/turbid/ cloudy;

(ii)Add 1 cm3 of sodium hydroxide into test tube containing solution Q. Record your observation. **(1 mark)**

Solution Q clears/ white colour fades off;

(iii)Explain the results observed in (b)(ii) above. **(2 marks)**

` ***Sodium Hydroxide breaks down the protein molecules into peptides; peptides form a clear solution;***

iv). what is the identity of solution **R?** **(1 mark)**

Enzyme/diastase

v) State **one** factor that can affect the process demonstrated in 3a **(v**) above **(1 mark)**

Increase in temperature