

Name.....Index No:.....

231/3

Candidate's Signature

BIOLOGY

Date:

PAPER 3

PRACTICAL

MARCH/APRIL- 2017

TIME: 1 ¾ HOURS



SACHO HIGH SCHOOL

Kenya Certificate of Secondary Education (K.C.S.E.)

231/3

Biology

Paper 3

1 ¾ Hours

INSTRUCTIONS TO CANDIDATES

Write your **name** and **index number** in the spaces provided above

Sign and write the **date** of examination in the spaces provided.

Answer **all** the questions in the spaces provided.

You are required to spend the first 15 minutes of the 1 ¾ hours allowed for this paper reading the whole paper carefully before commencing your work.

Additional pages must not be inserted.

Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

Candidates must answer all questions in English

For Examiners Use Only

Question	Maximum score	Candidate's score
1	14	
2	13	
3	12	
Total	40	

This paper consists of 6 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing

1. You are provided with a food sample labelled solution C. Using the reagents provided; carry out tests to identify the food substances present in the sample. (11 marks)

TEST FOR	PROCEDURE	OBSERVATION	CONCLUSION
1. Reducing sugars	<i>Into a test tube containing solution C, add Benedict's solution; boil (in a hot water bath);</i>	<i>Colour changes from blue to green to yellow and finally orange;</i>	<i>Reducing sugars present;</i>
2. Ascorbic acid	<i>Into a test tube containing dichlorophenol indophenol (DCPIP), add food sample C drop wise/drop by drop;</i>	<i>Blue colour (of dichlorophenol indophenol/DCPIP) retained;</i>	<i>Ascorbic acid/vitamin C absent;</i>
3. Proteins	<i>Into a test tube containing food sample C, add sodium hydroxide; followed by copper II sulphate drop wise/drop by drop;</i>	<i>Colour changes to purple/violet/mauve;</i>	<i>Proteins present;</i>

From the results above

- i) State the part of the digestive system where the digestion of the food substance begins. (2marks)
 Reducing sugars – *Mouth*;
 Protein – *Stomach*;
- ii) Name the deficiency disease arising from the food substance C. (1mark)

Scurvy; rej bleeding of mouth/gum/anaemia/swelling of the skin/poor healing of wounds/reduced resistance to diseases (these are symptoms of scurvy)

2. The photographs below show floral structures and germination process. Study them carefully then answer the questions that follow.



PLATE I



PLATE II



PLATE III

- a) (i) Describe the type of the ovary in **plate I**. (1mark)
Epigynous;
- (ii) With reasons name the agent of pollination of the flower in **plate I**. (1mark)
 Agent of pollination *Insect(s)*

Reasons

(3marks)

Large/conspicuous petals to be easily noticed/seen by the pollinator;

Brightly coloured (petals) to attract the pollinators;

Tubular/funnel shaped corolla/landing platform to ensure the pollinator(s) come into contact with the stamens/carpels;

(iii) Identify the parts labeled in **plate I**.

(3marks)

W *Petal;*

D *Staminal tube;*

L *Stigma;*

b) **Plate III** shows a plant obtained from **plate II**.

i) Identify the parts labelled.

(3marks)

R *Hypocotyl;*

T *Testa;*

Q *Cotyledon;*

ii) Explain the functions of the parts **R** and **T**.

(2marks)

R *Elongates pushing the cotyledon above the ground/protects the delicate plumule;*

T *Protects the seed from saprophytic bacteria, fungi and other organisms which may damage the embryo;*

3. Below are **diagrams** labelled **(a)** and **(b)** of specimens obtained from an animal. Examine them carefully then answer the questions that follow.

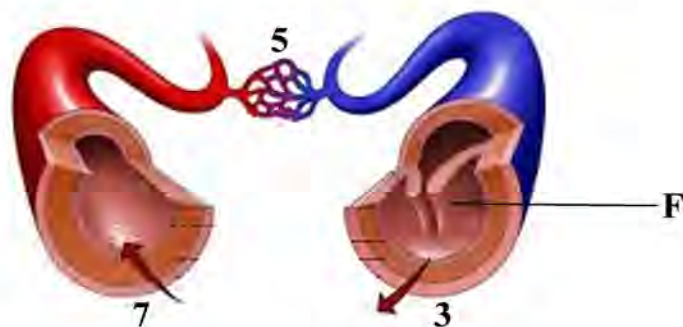


Diagram (a)



Diagram (b)

- (a) (i) In diagram (a), identify the structures labelled. (3marks)
- 3 *Vein*;
- 5 *Capillary (ies)*;
- 7 *Artery* ;
- (ii) Give a reason for the identities 3 and 7 in (i) above. (2marks)
- 3 *thin muscular wall / presence of valve*;
- 7 *thick muscular wall*;
- iii) Explain how blood vessel 5 is adapted to its function. (2marks)
- Narrow to enhance ultrafiltration*;
- One cell thick to reduce diffusion distance*;
- (iv) State the function of the structure labelled F. (1mark)
- Prevent back flow of blood*;
- (v) Identify the process by which certain materials pass out of structure 5. (1mark)
- Ultrafiltration*;
- (b) **Diagram (b)** shows the components in **diagram (a)**.

- (i) Identify structure **Hii** (1 mark)
Red blood cell;
- (ii) Using an observable feature only, explain how the structure named in **b (i)** above is adapted to its function. (1 mark)
Biconcave shape to increase the surface area for loading and offloading of respiratory gases;
- (iii) In what form is carbon (IV) oxide transported in structure **Hii** above. (1 mark)
Carbaminohaemoglobin;
- (iv) Name a hereditary disease represented by structure **Hi**. (1 mark)
Sickle cell anaemia;