KAMUKUNJI DISTRICT KCSE EVALUATION TEST – 2014

BIOLOGY 231/3 (PRACTICAL) CONFIDENTIAL

Each student to be provided with the following:-

1. Specimen W - clean fresh large Irish potato
2. Cork borer - 0.5 cm diameter
3. Distilled water
4. 2 beakers - 100 ml each
5. Concentrated sucrose solution labelled X 100 ml
6. Distilled water labelled Y 100ml
7. Tissue paper
8. 30 cm ruler
9. Iodine solution
10. Benedict's solution
11. 1% Copper sulphate solution
12. 10% Sodium hydroxide solution
13. Dilute hydrochloric acid
14. Sodium hydrogen carbonate
15. 5 test tubes
16. Means of heating
17. 2 labels.
18. Measuring cylinder.
19. Scalpel
20. Stop watch

NAME: ---------- **INDEX NO: ----------**
231/3 **CANDIDATES SIGNATURE:-**
BIOLOGY **DATE: ----------**
PAPER 3 (PRACTICAL)
JULY 2012
TIME 1 ¾ HOURS

KAMUKUNJI DISTRICT KCSE EVALUATION TEST

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided above.
2. Sign and write the date of examination in the space provided above.
3. Answer all questions in the spaces provided in this question paper.
4. You are supposed to spend the first 15 minutes of the 1 ¾ hours allowed for this paper reading the whole paper carefully before commencing your work.
5. Additional pages must not be inserted.
6. Candidates should check the question paper to ascertain that all the pages are printed as indicated and no questions are missing.

Questions	Maximum Score	Candidates
1	12	
2	12	
3	16	
Total	**40**	

1a) You are provided with specimen W push a cork borer through specimen W to remove 4 cylinders of potato tissue. Cut off one end of each cylinder. From the cut end measure 40 mm lengths and cut the cylinder. Repeat this for the other three cylinders. Put 25ml of solution X in a beaker labelled X and 25ml of solution Y in a beaker labelled Y. Place two cylinders in a beaker containing solution Y and the other two in a beaker containing solution X. Leave the experiments for 45 minutes. After 45 minutes remove the cylinders and mop them up with a tissue paper. Measure and record the length of each cylinder in the table below. (8mks)

Cylinder in solution		**Initial length**	**Final Length**	**Average length**	**% change in length**
X	1				
	2				
Y	1				
	2				

b) Account for observations made in solution

(i) X (2mks)

(ii) Y (2mks)

2. Peel the remaining potato and crush it completely using a mortar and pestle. Add 25m of solution S and stir well. Crush the potato further. Put the solution in a beaker leaving out the residue in mortar. Label the solution as B. Divide solution B in four portions in test tubes and carry out food tests using the reagents provided. Complete the table below. (12mks)

Food Substance	Procedure	Observation	Conclusion

3) Study photographs **C** and **D** and answer the questions.

PHOTOGRAPH B

PHOTOGRAPH C

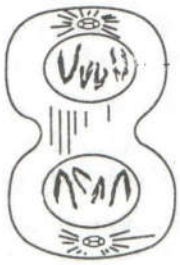
a) With a reason state the agent of pollination of each of the flowers. (4mks)

Flower	Agent of pollination	Reason
C		
D		

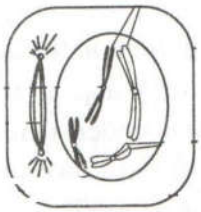
b) Classify the animal in photograph D using the taxonomic units below and reasons for your answer. (4mks)

Taxonomic unit		Reason
Phylum		
Class		

c) The diagrams below shows a type of cell division occurring in animal shown on photograph D. Identify each of the stages A to D giving reasons for your answer. (4mks)



A



B

D

C

Stage Reason

A ---------- ----------

B ---------- ----------

C. ---------- ----------

D, ---------- ----------

KAMUKUNJI DISTRICT MOCK – 2014
BIOLOGY PAPER 3 231/3

1. (a)

Cylinder in solution	**Initial length**	**Final length**	**Average length**	**% change in length**
X 1 2	40mm 40 mm (1 mk)	38 - 39.5 (mm) mm (1 mk)	38.75.mm ±0.5 (1 mk)	96.88% ±1.0 (1 mk)
Y 1 2	40mm 40mm *(1 mk)*	40.5 - 42 (mm) (mm) *(1 mk)*	41.25mm ±0.5 (1mk)	103.13% ±1.0 (1 mk)

(b) (i) In X – Solution X was hypertonic;
Potato cylinder lost water by osmosis;
(thus decrease in length) (2 mks)

(ii) In Y – solution Y was hypotonic;;
Potato cylinder gained water by osmosis;
(and became bigger (2 mks)

Food substance	Procedure	Observation	Conclusion
Starch ½ mk	Put a little of solution B in a test tube Add 3 drops of iodine solution 1 mk	Blue black colour ½ mk	Starch present ½ mk
Protein ½ mk	Put a little of solution B in a test tube Add equal amount of sodium hydroxide and shake; Add a few drops of copper sulphate and shake; 2 mks	Blue Colour ½ mk	proteins absent ½ mk
Reducing sugar ½ mk	Put a little of solution B in a test tube Add equal amount of benedicts solution and heat; 1 mk	Colour Blue colour ½ mk	Reducing sugar absent ½ mk
Non-reducing sugar ½ mk	Put a little of solution B in a test tube Add a few drops of dilute Hcl and heat then cool; Add sodium hydrogen carbonate drop by drop until fizzing stops. Add equal amount of benedicts and heat; 2 mks	Colour changes from blue to green to yellow orange ½ mk	Non-reducing sugar present ½ mk

2. (a) C - Wind; - inconspicuous petals/large anthers loosely attached to flexible filaments/Long feathery stigma which hang outside the flower; (2mks)

D - Insect - Large flowers with brightly coloured petals/ produce nectar (insect on diagram)

(b) Phylum Arthropoda;-

Reason - jointed appendagos/presence of exoskeleton/segmented body/3 body parts; (2 mks)

Class - Insecta;

Reason - 3 body parts/A pair of antennae
Pair of compound eyes/spiracles for breathing;

(c) A - Telophase; - Cell constricts in the middle/chromatids
Collect at opposite end/nuclear membrane forms round
Chromatids;

B - Prophase; - Centriole at opposite poles/chromosomes thicken and shorten/Nucleolus disappear.

C – Metaphase - Nuclear membrane disappear/spindle fibres lengthen/ chromosome arrange at the equator of spindle;

D - Anaphase; - Chromatids separate at centromere and migrate to opposite poles/spindle fibres begin to disappear;
(8 mks)