231 / 3
BIOLOGY
CONFIDENTIAL
JULY / AUGUST 2012

KISUMU NORTH AND EAST DISTRICTS JOINT TEST (KENDJET)

Kenya Certificate of Secondary Education 2012

231 / 3
BIOLOGY
CONFIDENTIAL
JULY / AUGUST 2012

CONFIDENTIAL TO ALL SCHOOLS FOR BIOLOGY TEACHERS

INSTRUCTION TO SCHOOLS:

The information contained in this paper is to enable the head of the school and the teacher in charge of Biology to make adequate preparations for this year's mock Biology practical examination. **NO ONE ELSE** should have access to this paper or acquire knowledge of its contents. Great care should be taken to ensure that the information contained herein **DOES NOT** reach the candidates either directly or indirectly. The teacher in charge of biology should NOT perform any of the experiment in the same room as the candidates nor make the results of the experiment available to the candidates or give any other information related to the experiment to the candidates.

Materials required:

1. Iodine solution
2. Benedicts solution
3. Scalpel blade
4. Pair of forceps
5. Petri dish
6. Specimen X (1% Starch solution)
7. Specimen K (a green tomato fruit or the one that begins to ripen)
8. A watch/wall clock
9. Four test tubes
10. A test tube rack
11. Two droppers
12. Water
13. A heater
14. Test tube holder

NAME……**INDEX NO**……..…..

SCHOOL …….

SIGNATURE……..…..…**DATE**……

231/3

BIOLOGY

PAPER 3

JULY/AUGUST 2012

1 ¾ HRS

KISUMU NORTH AND EAST DISTRICTS JOINT TEST
Kenya Certificate of Secondary Education 2012

231/3
BIOLOGY
PAPER THREE
PRACTICAL
JULY/AUGUST 2012

Instructions to candidates;

- *Write your name and index in the spaces provided above.*
- *Sign and write the date of examination in the spaces provided above.*
- *Answer all questions in the spaces provided above.*
- *You are required to spend the first **15** minutes of the $1^3/_4$ hours allowed for this paper reading the whole paper carefully before commencing your exam.*
- *Answers must be written in the spaces provided in the question paper.*
- *Additional papers must not be inserted*
- *The candidate should check the question paper to ascertain that all the pages are printed as indicated and no questions are missing.*

For examiners only

Question	Maximum score	Candidate scores
1	14	
2	14	
3	12	
Total score	**40**	

1. You are provided with the following; specimen K, specimen X, scalpel blade, pair of forceps, Iodine solution and Benedict's solution.
   a) What type of fruit is K? (1mrk)

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b) With a reason, identify the agent of dispersal for specimen. (2mrks)

Agent

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Reason

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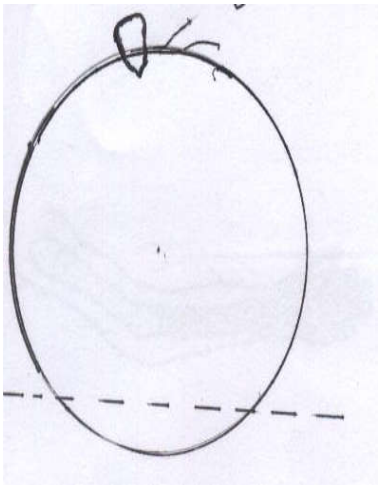
c) On specimen X, carry out food tests using the re agents provided. Record your procedures, observations and conclusions in the table below. (4mrks)

Food substance	Procedure	Observation	Conclusion

d) Cut the specimen 1.0cm from the tip as well as shown in the diagram into two parts:



Place both pieces on the petridish with the $6cm^3$ of specimen X so that the cut surface is in contact with the substance. Allow the pieces to remain there for 30 minutes. After 30 minutes, carefully remove the pieces. Put the solution into two test tubes. Use the reagents provided to carry out food tests. Record your observations. (2mrks)

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e) Account for the observation in (c) and (d) above. (4mrks)

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f) What is the significance of the process being investigated. (2mrks)

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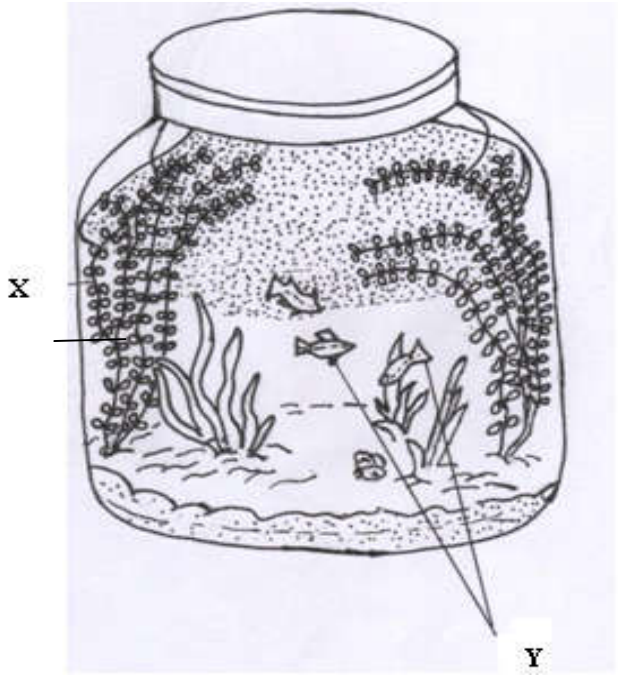
2. In an ecological study carried out by form 3 students, they designed an experiment as shown below.
The jar in which the materials are assembled was airtight; containing seawater, algae, small crustaceans, saprophytic bacteria, X and Y. the set up was kept in the open sun and studied for 5months. Study this illustration carefully and answer the questions that follow.



a) What was the aim of the study? (1mrk)

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b) What was the possible observation the students made after 5 months. (1mrk)

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c) Account for your answer in (b) above. (6mrks)

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d) Identify X and Y in the jar. (2mrks)

X.....

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Y.....

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e) What would happen if?

i) X was removed from the jar. (2mrks)

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ii) The set up was put in the dark. (2mrks)

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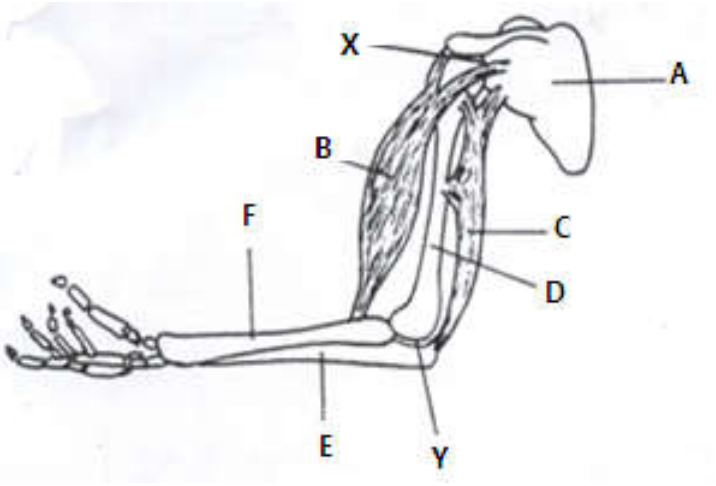
3. i) The diagram below shows the bones and two of the muscles in the human arm



a) Name the parts A, C, E and F (2mrks)

A.....

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C.....

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E.....

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F.....

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b) Name the type of joint present in part Y. (1mrk)

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..... What type of movement is possible at point X.

(1mrk)

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c) What happens when the muscle labeled C contracts (1mrk)

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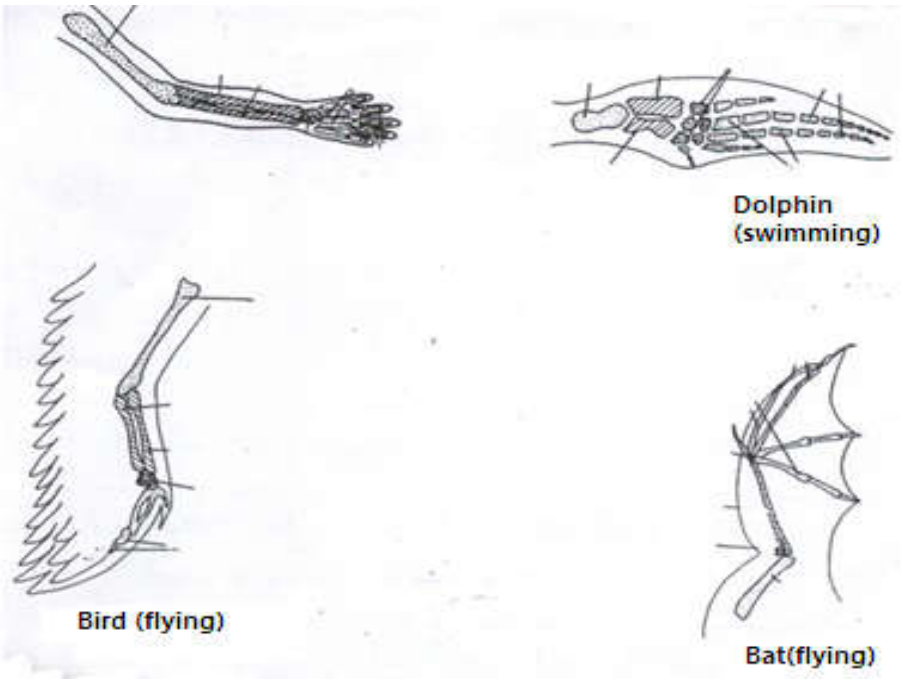
ii) In the study of evolution researchers have observed that vertebrate's animals have the type of structures shown below.



a) Which theory of evolution do this structures support? (1mrk)

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b) On the diagrams identify the basic similarities observed. (2mrks)

c) Explain clearly why this structures justify evolution in animals. (3mrks)

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231/3 BIOLOGY PAPER 3 PRACTICAL
MARKING SCHEME

1. a) Berry ; (1mrk) reject wrong spelling

   b) Man/animal ; (1mrk)

   Reason; Brightly coloured;

   Succulent/fleshy;rej flesh (1mk)

   c)

Food substance	Procedure	Observation	Conclusion
Starch ;	Add one drop of Iodine to specimen X soln and shake;	Blue black colour;	Starch present
Reducing sugar;	Add 1cm3 of Benedict solution to specimen X and boil/heat strongly/warm in water bath;	No colour change;	Reducing sugars absent

   d) – Blue –black/dark blue black;

   - Colour changes from blue green to yellow then orange

   Reject brick red

   Acc. Two colours (2mrks)

   e) In (C) only starch is present; the enzymes in the fruit breakdown starch into sugars; hence colour turned to yellow/orange; (4mks)

   f) – Enzymes in the fruit are important in ripening of fruit;

   - Complex foods (starch) in the food are broken down into simple sugar during ripening; 2mks)

2. a) To determine whether the jar provided conditions necessary in a self sustaining ecosystem.(1mk)

   b) Plants and animals would continue to survive in the jar. (1mk)

   c) Plants photosynthesis in the presence of light; producing oxygen which is used up by animals in respiration; The animals produce carbon (IV) oxide which is used up by plants to produce/manufacture food; the plants and a animals in the jar use water to support metabolic reactions, the also get mineral salts from the sea water; dead material in the jar are decomposed by saprophytic bacteria reducing the accumulation of wastes. The water plants provide food for small crustaceans, the carnivorous fish reduce the population of crustaceans; feed on algae and water plants; reducing competition for resources; (6mks)

   d) X – Water plants (2mks)

   Y – Fish

e) (i) There would be less supply of oxygen in the system; this would suffocate the animals(causing death). There would be accumulation of CO_2 in the jar; changing pH in the water.(2mks)

ii) There would be no supply of the light energy hence limited photosynthesis; plants would then yellow up produce less food for animals; which would cause starvation. There would also be less production of oxygen; suffocating the animals to death.(2mks)

3. i) a) A) Scapula;
C) Triceps ;
E) Ulna;
F) Radius; (4 x ½)

b) Hinge joint;(1mk)

c) Movement through 360^0 (All directions) (1mrk)

d) When muscle C contracts, the arm straightens/ when muscle C contracts, B will relax and the arm straightens; (1mrk)

ii) a) Organic evolution; (1mrk)

b) Identify: humerus ½
Ulna/radius ½
Carpals ½
Metacarpals ½
Phalanges ½
(Indicate in all diagrams) (2mrks)

c) Homologous ; (1mrk)

d) All the structures have a pentadactyl (5digit) plants pointing to one origin but evolved to perform different functions due to demands of different environments in which they live (diversity) (3mrks)

