THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2

BIOLOGY 2
ALTERNATIVE TO PRACTICAL
(For both School and Private Candidates)

Time: 2:30 Hours ***Friday, 07th October 2011 a.m.***

Instructions

1. This paper consists of **five (5)** questions. Answer **all** the questions.
2. Each question carries 10 marks.
3. Except for diagrams that must be drawn in pencil, all writing should be in blue or black pen.
4. Calculators are **not** allowed in the examination room.
5. Cellular phones are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

1. Suppose you have been provided with **Irish potato** and **Sugar cane**. Then you are required to design and carry out an experiment to identify the food reserves present in the Irish potato and sugar cane.

   (a) Explain how you will prepare the Irish potato and sugar cane for the experiment.

   (b) Write down the experimental work which will lead to the identification of the food substances as shown in the table below.

Food tested	Procedure	Observation	Inference

2. A healthy plant was kept in the dark for twenty four (24) hours; while still intact on the plant, four healthy leaves were treated as follows:

   - The 1st leaf was smeared with Vaseline on both surfaces;
   - The 2nd leaf was smeared with Vaseline on the underside only;
   - The 3rd leaf was smeared with Vaseline on the upper surface only;
   - The 4th leaf was left untreated.

   The plant was then exposed to sunlight for some hours. The leaves were detached, boiled in water and thereafter in alcohol. Each leaf was then treated with iodine solution.

   (a) Suggest the possible aim of the experiment.

   (b) What was the purpose of keeping the plant in the dark?

   (c) What was the purpose of boiling the leaves in:
   (i) water
   (ii) alcohol?

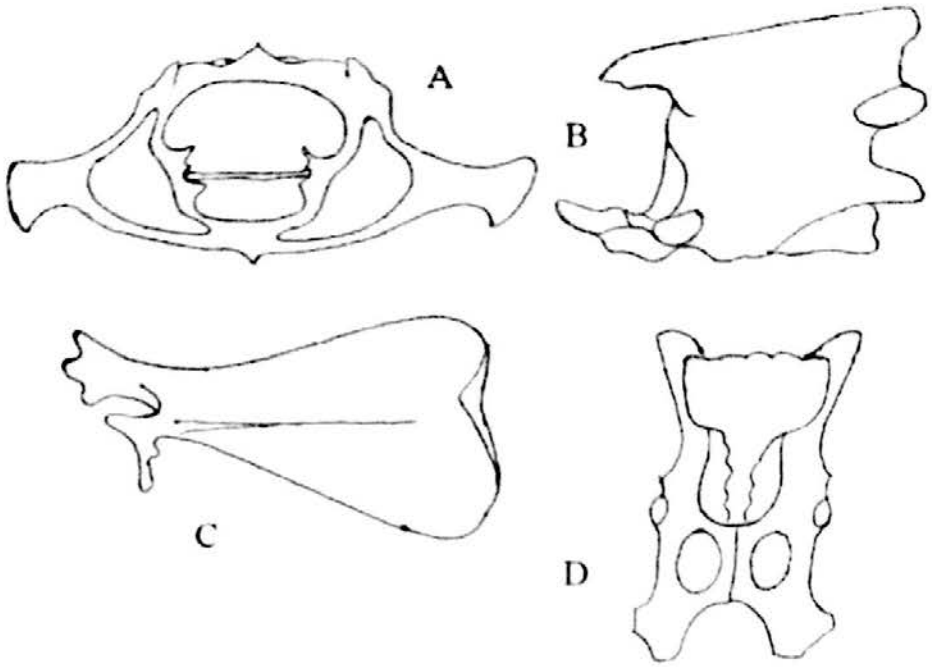
   (d) Which leaf or leaves did not turn blue-black when treated with iodine?

   (e) Which leaf or leaves turned blue-black when treated with iodine?

   (f) Which leaf or leaves acted as a control?

   (g) Using your biological knowledge, interpret the results of this experiment.

3. Observe the diagrams of different bones found in a mammalian body then answer the questio that follow.



(a) Name each of the bones.

(b) (i) What type of a joint does A and B form?
(ii) Describe the movement allowed by this joint.

(c) (i) Name another type of joint and identify its location in the human body.
(ii) Describe the kind of movement allowed by the joint named in (c) (i) above.

(d) (i) Name any two types of muscles.
(ii) Mention part(s) of the body in which muscles in d(i) can be found.

4. Figure 1 shows parts found in a typical flower.

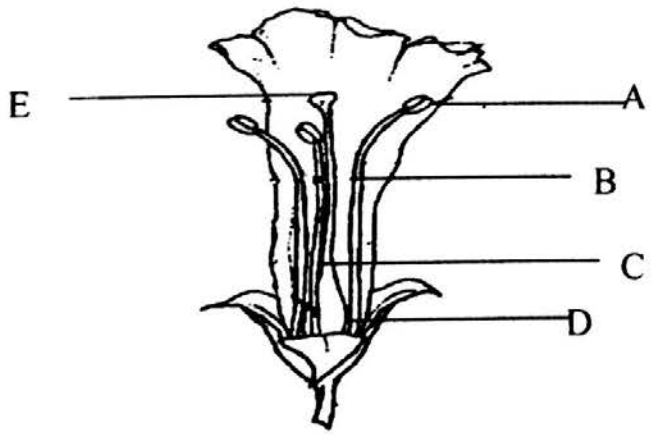


Figure 1

(a) Identify and label the parts of the carpel and the parts of the stamen.

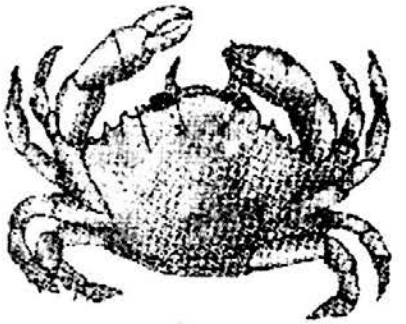
(b) State the functions of each of the parts labeled in 4(a) above.

(c) Based on the observable characteristics of the flower in 4(a), suggest the agents of pollination.

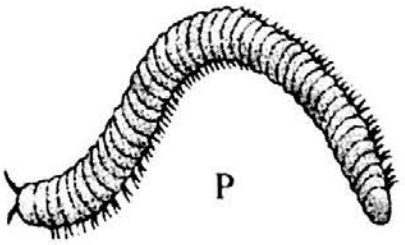
5. Study the organisms below and then answer the questions that follow.

M

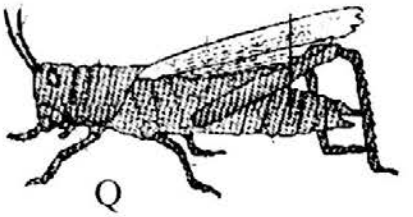
N



O



P



Q

(a) (i) Place organisms M – Q in their respective class.
(ii) Which organisms are placed in the same class? Give reasons.

(b) Provide at least one distinguishing characteristic of the class to which P, N and O belongs.

(c) (i) Where would you find organisms M and O?
(ii) Of what economic importance is organism O to man?