KENYA NATIONAL EXAMINATION COUNCIL

KCSE 2009

BIOLOGY

PAPER 2

SECTION A (40 MARKS)

Answer all the questions in this section in the spaces provided

1. When the offspring of purple and white flowered pea plants were crossed, they produced purple and white flowered plants in the ratio of 3: 1

   Using letter H to represent the gene for purple colour

   (a) State the genotype of:

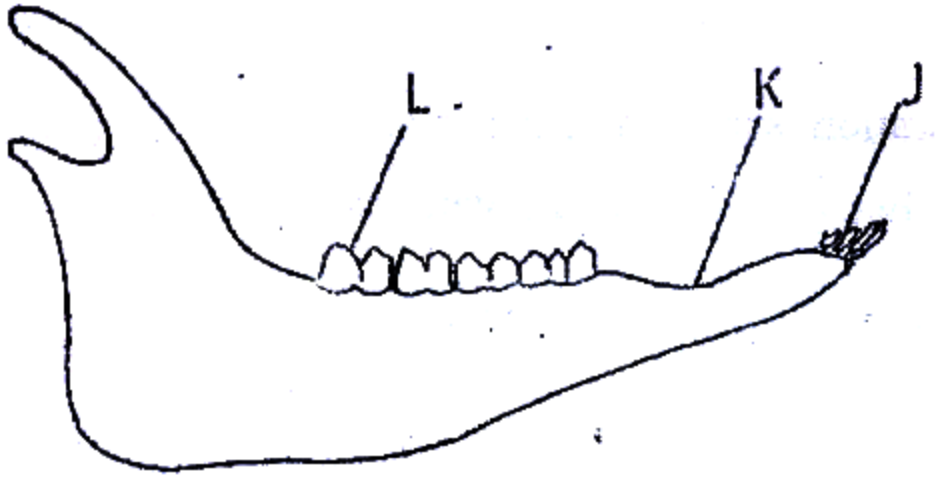
   (i) Parents (2 mks)

   (ii) F_1 Generation (1 mk)

   (b) Work out the cross between plants in the F_1 generation (4 mks)

   (c) Account for the colour the flowers in plants of the F_1 generation (1 mk)

2. The diagram below represents the lower jaw of a mammal



(a) Name the mode of nutrition of the mammal whose jaw is shown (1 mk)

(b) State one structural and one functional difference between the teeth labeled J and L

Structural (1 mk)

Functional (1 mk)

(c) (i) name the toothless gap labeled K. (1 mk)

(d) Name the substance that is responsible for hardening of teeth (1 mk)

3. (a) what is meant by the term biological control (1 mk)

(i) Give an example of biological control (1 mk)

(b) (i) What is eutrophication? (3 mks)

(ii) What are the effects of eutrophication (3 mks)

(c) Name a substance that is responsible for acid rain (1 mk)

4. (a) (i) Explain the changes that take place in the pupil and iris of a human eye when a person moves from a dark room to a room with bright light (3 mks)

(ii) What is the significance of the changes explained in (a) above (1 mk)

(b) How does the human eye obtain nutrients? (3 mks)

(c) Explain why images that form on the blind spot are not perceived (2 mks)

5. (a) what happens when a wilting young plants is well watered (3 mks)

(b) Name a support tissue in plants thickened with

(i) Cellulose (1 mk)

(ii) Lignin (1 mk)

(c) Give three functions of pectoral and pelvic fins in a fish (3 mks)

SECTION B (40 MARKS)

Answer questions 6 (compulsory) and either question 7 or 8 in the spaces provided after questions 8

6. An experiment was carried out to investigate the effect of temperature on the rate of reaction catalyzed by an enzyme. The results are shown in the table below

Temperature (^{0}C)	Rate of reaction in mg of products per unit time
5	0.2
10	0.5
15	0.8
20	1.1
25	1.5
30	2.1
35	3.0
40	3.7
45	3.4
50	2.8
55	2.1
60	1.1

On the grid provided draw a graph of rate of reaction against temperature

(6 mks)

(b) When was the rate of reaction 2.6 mg of product per unit time? (2 mks)

(c) Account for the shape of the graph between

(i) 5^0 C and 40^0 C (2 mks)

(ii) 45^0 C and 60^0C (3 mks)

(d) Other than temperature name two ways in which the rate of reaction between 5^0C and 40^0C could be increased (2 mks)

(e) (i) Name one digestive enzymes in the human body which works best in acidic condition

(1 mk)

(ii) How is the acidic condition for the enzyme named in (e) (i) above attained?

(2 mks)

(f) The acidic conditions in (e) (ii) above is later neutralized

(i) Where does the neutralization take place?

(ii) Name the substance responsible for neutralization (1 mk)

7. How are flowers adapted to wind and insect pollination? (20 mks)

8. Describe the role of the liver in homeostasis in the human body (20 mks)

ANSWERS:

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