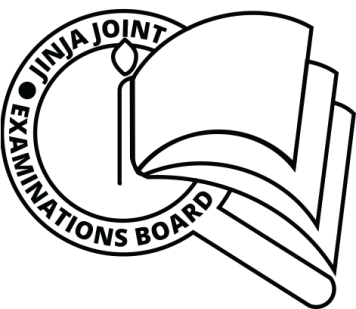
**JINJA JOINT EXAMINATIONS BOARD**

**MOCK EXAMINATIONS 2019**

**553/2**

**PP 2 BIOLOGY MAKING GUIDE JJEB**

1. You are provided with specimen K which is a plant organ, 2 pieces of specimen L which is an animal tissue, solutions M and N. You are required to identify the active ingredient in K and the nature of solutions M and N.
2. Carry out the following tests and record your observations and deductions in the table below.
3. Peel specimen K and cut out four small cubes measuring

1cm x 1cm x 1cm.

1. Leave cubes 1, 2 and 4 intact and cut cube 3 into eight equal pieces.
2. Boil one piece of specimen L in 5 cm3 of water for 5 minutes.
3. Label 6 test – tubes as 1, 2, 3, 4, 5 and 6.
4. Add 2cm3of hydrogen peroxide to test – tubes 1, 2, 3, 4 and 5 and 2cm3 of distilled water in test – tube 6.
5. Treat each of the test – tube as shown below. (12 mks)

|  |  |  |  |
| --- | --- | --- | --- |
| **TEST – TUBE** | **TEST** | **OBSERVATION** | **DEDUCTION** |
|  | Add, 1 cm3 of solutions M Test the mixture using red and blue litmus paper.  Add one piece of specimen K (cube 1) | The blue litmus paper remains blue and red turns to blue fast effervescence | Mixture is alkaline fast break down of hydrogen peroxide |
|  | Add 1cm3 of solution N shake and test the mixture using blue and red litmus paper. Add 2nd cube of K. | Blue litmus turns red and red remains red.  Slow effervescence | Solution is acidic slow break down of hydrogen peroxide. |
|  | Add all the piece of cube 3 followed by 3 drops of solution M | Vigorous effervescence | Vigorous break down of hydrogen peroxide. |
|  | Add one boiled piece of specimen L | No effervescence acc no reject  No observable change | No break down of hydrogen peroxide |
|  | Add 4 drops of solution M – Test the mixture using red and blue litmus paper. Then add the un boiled piece of specimen L | Blue litmus paper remains blue and red turns to blue very fast break down of hydrogen peroxide | Solution is alkaline.  Very fast break down of hydrogen peroxide. |
|  | Add one piece of specimen K. | No effervescence | No break down of distilled water. |

1. Explain your results in test – tube 3, 4 and 6. (04 ½ mks)
2. Test – tube 3

Cutting the cube into tiny pieces increased surface area exposing more enzyme molecules hence vigorous break down of hydrogen peroxide.

1. Test – tube 4

Boiling the cube denatured the enzyme and hence no break down of hydrogen peroxide hence no effervescence.

1. Test – tube 6.

Distilled water is not a substrate of the active ingredient / enzyme and hence no break down of distilled.

1. With a reason suggest the identity of the active ingredient in specimen K .

(01 mk)

1. Identity

Catalase

1. Reason

It broke down hydrogen peroxide to oxygen and water.

1. From your observation state two properties of the active ingredient in specimen K.

* Specific in nature
* Sensitive to PH
* Denatured by high temperature

1. (i) Compare your results in experiment in test – tube 1 and test – tube 5

In test – tube 5 the reaction was faster than the reaction in test – tube 1.

(ii) What conclusion do you draw from your observation in d (i) above.

The animal tissue contains more catalase then the plant tissue.

1. You are provided with specimens R, Q, O and P which are animals
2. Giving three reasons in each case classify the specimens as follows.(04 mks)
3. Phylum

Arthropoda rej - arthropod

- Anthropoda

Reason

* Have segmented bodies
* Jointed legs / appendages
* Exoskeleton

1. Class

Insect rej insect

Reasons

Head , thorax and abdomen.

* Have 3 main body parts
* Have 3 pairs of legs
* Have a 3 segmented thorax

1. Using a hand lens where necessary examine the head region of the specimens and describe the observable characteristics of the eyes, mouth parts and antennae. (06 mks)

|  |  |  |  |
| --- | --- | --- | --- |
| Specimen | CHARACTERISTICS | | |
| Eye | Antennae | Mouth parts |
| 1. R | A pair of prominent compound eyes | Short hairy antennae. | Modified into proboscis  - 2 pairs of maxillae |
| 1. Q | Pair of compound eyes | Pair of long, segmented | Serrated mandibles |
| 1. O | A pair of compound eyes | Short hairy segments | Blunt mandibles |
| 1. P | No compound eyes | Short segmented antennae | Sharp mandibles  A pair of palp |

1. Using the characteristics in the table 2 construct a dichotomous key to identify the specimen R, Q, O and P. (03 mks)

1

a. Has no compound eyes ..........................................................P

b. Has compound eyes ...............................................................2

2

a. Has long antennae.....................................................................Q

b. Have short antennae. ...............................................................3

3

a. Has proboscis .....................................................................R

b. Has no proboscis ................................................................O

1. From your observation of specimen R state two structural characteristics which makes the specimen suitable as a vector. (02 mks)

* Has a hairy body for carrying germs
* Has a long tubular proboscis which carries germs
* Has wings that make it fly and legs that make it move faster and carry germs.

1. Pluck off the wings, the legs, the head and the abdomen of specimenR, draw and label the remaining part of specimen R. State your magnification.

(05 mks)

..........................................................................................................................

Drawing of the remaining parts of specimen R after removing wings, legs and abdomen.

hair prothorax

stride metathorax

mesothorax

heltare

X2 – X5

1. You are provided with specimens A and B which are similar parts from different plants.
2. Stating two observable features in each case suggest the mode of pollination of each of the specimens A and B. (05 mks)
3. Mode of pollination of specimen A

Insect pollination

Features

* Anthers below the stigma
* Large and conscipious to easily be seen by insects.
* Brightly coloured potters to attract pollinators
* A good scent to attract pollinators.
* Stick pollen grains to stick on the visiting insect.

1. Mode of pollination of specimen B

Wind pollinated.

Features

* Long filament that project out the flower and expose the anthers.
* Powdery pollen grains that can easily be blown by wind
* Dull coloured bracts.
* Small and inconcipious.

1. Give 3 structuraldifferences between specimens A and B (03 mks)

|  |  |
| --- | --- |
| Specimen A | Specimen B |
| 1. Has both the pistil and stamen | (i) Has only the stamen |
| 1. Has brightly coloured petals | (ii) Has no petals |
| 1. Has an ovary | (iii) Has no ovary |

1. Observe specimen A carefully and describe the following parts (04mks)
2. Calyx

* Has five fused, brightly coloured sepals
* It is hairy and veined.
* Pointed apex

1. Corolla

* Has five free vennated, brightly coloured, veined petals.
* Rounded apex

1. Remove the petals and sepals and the epicalyx of specimen A
2. What type of ovary is found specimen A

Superior ovary

1. Give a reason for your answer.

The ovary is above the receptacle / point of attachment of the rests of the floral parts.

1. Make a well labelled drawing of specimen B. (04 mks)

DRAW OF SPECIMEN

Filament

Bracts of upper flower

Outer bracts

Anther

**E N D**