

1. You are provided with the following materials and apparatus.

- Specimen E
- Hydrogen peroxide
- A beaker
- A scalpel
- 2 test tubes, labelled A and B
- A dropper
- Source of heat
- White tile
- Wooden splint

Procedure

- (i) Peel a portion of specimen E using the scalpel and cut out two equal portions of about 1 cm^3 each.
- (ii) Macerate/cut into smaller pieces one portion on a white tile and place the pieces in the test tube labelled A.
- (iii) Boil the other portion in a beaker, macerate on a white tile and transfer it into the test tube labelled B.
- (iv) To each test tube, add 3 drops of hydrogen peroxide and record the observations.

(a)

Test tube	Observations	Conclusion
A
B

(b) State the aim of the experiment.

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(c) Give the reason for macerating specimen E before adding hydrogen peroxide. (2 marks)

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(d) (i) Name the organ in the human body where the reaction in test tube A occurs. (1 mark)

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(ii) State the significance of the reaction to the human body. (1 mark)

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(e) Suggest two other factors that are likely to affect the rate of reaction in test tube A. (2 marks)

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2. You are provided with the following materials and photographs.

- Specimen H
- Specimen J
- Hand lens



(a) Complete the following table by classifying the specimens H, J and M based on observable features only.

Specimen	Class	Reasons
H		
J		
Photograph M		

(9 marks)

(b) Explain the ecological significance of the Kingdom to which specimen H belongs.

(2 marks)

(c) Make a labelled diagram of the dorsal view of the abdomen of specimen J. (2 marks)

(d) Construct a food chain with four trophic levels involving the specimens provided and those presented in the photographs. (1 mark)

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3. You are provided with the following materials.

- Specimen N
- Specimen P
- Microscope slide
- Light microscope
- Cover slip
- Boiling water
- Wooden Splint

(a) Other than the leaf margin, state one observable difference between specimen P.

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(b) Explain the observable adaptations of specimen N to its habitat.

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- (c) Put the boiling water in a beaker and dip specimen N in the hot water. Using the *waxen* splint, turn the specimen to make observations on both surfaces while dipped in the water.
- (i) State difference in the observations made on the upper and lower surfaces of the specimen.

(2 marks)

Upper Surface	Lower Surface
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- (ii) Account for the difference in the observations made in (c)(i).

(3 marks)

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- (d) Peel off the epidermis from specimen P. Mount a portion on a slide, cover with a cover slip and observe under a light microscope.

- (i) Make a labelled drawing of the observed image.

(3 marks)

- (ii) Describe how you would determine the magnification of the image.

(1 mark)

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