

231/2
BIOLOGY
Paper 2
(PRACTICAL)
Oct./Nov. 2001
2 ¼ hours

- 1 You are provided with a portion of onion bulb.
Remove one fleshy leaf from the portion.
Peel the epidermis from the inner surface of the leaf.
Place it on a drop of water on a slide.
Place a coverslip on the epidermis.
Place a drop of iodine solution at one edge of the coverslip. Using a blotting paper drain off excess iodine solution and water from the opposite edge of the coverslip.
Observe the epidermis under low power, then under medium power.

- (a) Draw and label two neighbouring cells. (5 marks)

Magnification. (1 mark)

- (b) Why was staining of the epidermis necessary? (1 mark)

- (c) Work out the length and width of one cell as seen under medium power. (6 marks)

Place a drop of liquid L at the edge of the coverslip. Drain the liquid from the opposite edge to allow it flow across the epidermis. Leave the set up for about 5 minutes. Observe under medium power.

- (d) Draw and label two neighbouring cells. (3 marks)

- (e) Account for the results in (d) above. (4 marks)

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2. You are provided with specimens labelled M and N. Examine them.

- (a) Identify the specimens and state the organisms from which they were obtained. (4 marks)

Specimen	Identity	Organism
M		
N		

(b) Draw and label specimen M.

(5 marks)

(c) Using observable features only, explain how specimen M is adapted to its function.

(8 marks)

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(d) State three distinguishing features of specimen N.

(3 marks)

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(e) State the functional relationship between specimens M and N.

(1 mark)

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2. You are provided with specimen labelled E, 0.0% DCPIP and 0.1 Ascorbic acid. Examine specimen E

a) i) What part of the plant is specimen E

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ii) Give a reason for your answer in (a) (i) above

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b) Cut a transverse section through specimen E

i) Draw and label one of the cut surfaces

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State the magnification of your drawing?

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ii) State the type of placentation of specimen E

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c) Name the agent of dispersal of specimen E

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d) State how specimen C is adapted to its mode of dispersal

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e) i) To 1cm³ of DCPIP in a test tube, and 0.1% solution of ascorbic acid drop by drop until the colour of DCPIP disappears. Shake the test tube after addition of each drop. Record the number of droplets used

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ii) To another 1cm³ of DCPIP in a test tube add the juice from specimen E drop by drop. Shake the test tube after addition of each drop until the colour of DCPIP disappears. Record the number of drops used?

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iii) From the results obtained in (e) and (ii) above, calculate the percentage of ascorbic acid in the juice obtained from specimen E. Show your working

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iv) State two factors that would influence the accuracy of the results.

- (ii) Give a reason for your answer in b(i) above. (1 mark)
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- (c) State the significance of the shiny upper surface of specimen P4. (2 marks)
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- (d) Observe the floral parts of specimen P3.
What is the significance of the brightly coloured structures onto which the flowers are attached? (1 mark)
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- (e) Name two features that make specimen P5 adapted to its environment. (2 marks)
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- (f) Name a feature that is used to classify P6 as monocotyledonous plant. (1 mark)