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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)

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

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

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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	.....	.....

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(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

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 $1cm^3$ 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.

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(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)

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