

BIOLOGY
PAPER - 2
(PRACTICAL)

(Three hours)

(Candidates are allowed additional 15 minutes for only reading the paper.
They must NOT start writing during this time.)

Answer all questions.

All working including rough work should be done on the same sheet as the rest of the answers.
The intended marks for questions or parts of questions are given in brackets [].

Note: Q4 (Spotting) is to be attempted on a separate continuation booklet. The continuation booklet is to be handed over to the Supervising Examiner after the last observation. The continuation booklet should be attached to the main answer book of the candidate after examination.

Question 1

- (a) You are provided with two flower specimens **D-41** and **D-42**. Describe the floral characteristics of each in semi-technical terms. (The details of individual whorls are not required.)
- (b) With a sharp razor blade, cut a longitudinal section of flower specimen **D-41**. Place one of the cut surfaces on a moist filter paper. **Show it to the Visiting Examiner.**
Draw a neat and labelled diagram of the cut surface.
- (c) Cut a longitudinal section of flower specimen **D-42** with a sharp razor blade. Arrange one cut surface on a moist filter paper and draw a neat and labelled diagram of this cut surface.
- (d) Observe the cut surfaces of the flower specimens **D-41** and **D-42** with the hand-lens provided and record your observations of the following features in a tabular form as follows:

		D-41	D-42
(i)	Corolla Shape		
(ii)	Androecium:		
	(1) Relation of stamens to each other		
	(2) Relation of stamens to petals		

Gynoecium			
(1)	Number of locule(s)		
(2)	Type of placentation		

- (e) Take a fresh specimen **D-42**. Isolate its pistil. Cut a transverse section of its ovary. Draw a neat labelled diagram of the transverse section.
- (f) Name the families to which each specimen **D-41** and **D-42** respectively belong.
- (g) Write *two* characteristic features of each family you have mentioned in (f) above.
- (h) Draw a floral diagram of specimen **D-42**.
- (i) Write the floral formulae of **D-41** and **D-42**.
- (j) Mention the botanical name of *one* economically important plant belonging to each family that you have named in (f) above.

Question 2

- (a) You are provided with glassware and twigs of plant **D-43** to set up an experiment to demonstrate photosynthesis. Set up the experiment using tap water and one or two twigs of plant **D-43**.
- (b) Keep the set-up at a distance of 5 cm, from the source of light. When gas bubbles start emerging from the cut end of the twig(s), **show the experimental set-up to the Visiting Examiner**.
Draw a neat and fully labelled diagram of the experimental set-up.
- (c) Count the number of bubbles evolved in one minute and record it. Repeat your observations for two more readings in this set-up.
Tabulate the readings as shown in the table in (f). Calculate the average number of bubbles (*x*) evolved in one minute.
- (d) Now, place the experimental set-up at a distance of 15 cm. from the source of light. Wait for two minutes. Count the number of gas bubbles evolved in one minute. Take three readings. Calculate and record the average number of bubbles (*y*) evolved in one minute.
- (e) Shift the set-up at a distance of 25 cm. from the source of light. Wait for two minutes. Count the number of gas bubbles evolved in one minute. Again take three readings. Calculate and record the average value (*z*).

(f) Tabulate your observations as follows:

Distance of set-up from light source		Number of gas bubbles evolved per minute			
		I	II	III	Average value
(c)	5 cm				(x)
(d)	15 cm				(y)
(e)	25 cm				(z)

- (g) Explain your observations with reference to each average value, (x), (y) and (z) recorded by you in the table above.
- (h) Name the plant specimen **D-43**.
- (i) Mention *two* precautions taken by you while setting up this experiment.
- (j) What is concluded from this experiment?

Question 3

- (a) With the sharp razor/blade provided, cut thin transverse sections of specimen **D-44**. Select a good transverse section and stain with safranin. Mount the section in glycerine. Observe it under low power of the microscope and **show it to the Visiting Examiner.**
- (b) Draw a neat labelled outline of the mount as observed under the microscope (Cellular details are not required.)
- (c) Answer the following questions:
- Identify the given specimen.
 - Give *two* reasons to support your answer in (c)(i) above.

Question 4

Identify the given specimens A to E. Give *two* reasons to support your answer in each case. Draw a neat labelled diagram of each specimen. You are not allowed to spend more than three minutes for each spot.

Note: Hand over your continuation booklet to the Supervising Examiner after you finish answering this question.

Question 5

Show the following to the Visiting Examiner for assessment:

- (a) Project
 - (b) Biology Practical File.
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