

BIOLOGY

PAPER - 2

(PRACTICAL)

(Maximum Marks: 30)

(Time allowed: 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 answer.

The intended marks for questions or parts of questions are given in brackets []

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

Question 1

[5]

- (a) Observe the given specimen **D-41** carefully. Describe its floral characteristics in semi-technical terms. (Details of individual whorls are not required.)
- (b) With the help of a sharp razor blade, cut a longitudinal section of the specimen **D-41**. Place one of the cut surfaces on a moist filter paper so that all the parts are clearly visible. **Show it to the Visiting Examiner.**
- (c) Draw a neat and labelled diagram of one of the cut surfaces.
- (d) With the help of the hand lens provided, carefully observe the stamens. Record your observations in a tabular form as shown below:

| Androecium: | | D-41 |
|-------------|---------------------------------------|------|
| (i) | Relationship of stamens to each other | |
| (ii) | Number of stamens | |
| (iii) | Nature of anthers | |

- (e) Take a fresh specimen of **D-41**. With the help of forceps, remove the calyx and corolla. Isolate the gynoecium. Cut a transverse section of the ovary. Mount the section of the ovary in water, on a glass slide and **show it to the Visiting Examiner.**

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Turn over

- (f) Draw a neat labelled diagram of the transverse section.
- (g) Based on your observation in 1(e), complete the table given below:

| Gynoecium: | | D-41 |
|-------------------|---|-------------|
| (i) | Position of the ovary with respect to other floral whorls | |
| (ii) | Type of placentation | |
| (iii) | Nature of stigma | |

- (h) Write the floral formula of the specimen **D-41**.
- (i) Draw the floral diagram of the specimen **D-41**.
- (j) Name the family to which the specimen **D-41** belongs.
- (k) Write two characteristic features of the family mentioned by you in Q.1(j).
- (l) Mention the botanical name (including genus and species) of one economically important plant belonging to this family.

Question 2

[3]

- (a) You are provided with specimen **D-42**.
- (b) Take half of the specimen **D-42**, peel it and with the help of mortar – pestle make a fresh preparation of pulp consistency.
- (c) Take 10 ml of the pulp in a beaker and add 50 ml of extraction fluid (1.5 gm table salt + 10 ml of liquid detergent + 90 ml distilled water).
- (d) Place the beaker in a water bath set at 70 °C for 15 minutes. Stir gently with a glass rod.
- (e) Filter 10 ml of cooled content into a clean test tube (labelled 'T') and slowly pour 90 % of chilled ethanol.
- (f) Note the changes observed in the following table:

| Test tube | Observation |
|------------------|--------------------|
| T | |

- (g) **Show the test tube to the Visiting Examiner.**
- (h) Name the structure that has become visible in the test tube.

- (i) What is the main function of the structure you mentioned in (h) above.
- (j) Why is liquid detergent used in the extraction fluid?
- (k) What is the purpose of using chilled ethanol in this experiment?

Question 3

[2]

- (a) With the help of a sharp razor blade, cut thin transverse sections of the specimen **D-43** provided. Select a good section and stain it with safranin. Mount the section in glycerine on a glass slide. **Show your slide to the Visiting Examiner under a low power microscope.**
- (b) Draw a neat labelled diagram of the mount of **D-43** as observed under the microscope. (*Microscopic details are not required.*)
- (c) Identify the given specimen.
- (d) Give two reasons to support your answer in Q.3(c) above.

Question 4

[5]

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 sheets to the Supervising Examiner after you finish answering this question.*

Question 5

Show the following to the Visiting Examiner for assessment:

- (a) Project [10]
- (b) Biology Practical File. [5]