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 answer.

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

Question 1 **[5]**

(a) Cut the floral head (capitulum) of specimen **D-41** into two equal (longitudinal) halves. From one of the halves isolate one outer flower (ray floret) and one central or inner flower (disc floret). Put these florets on a wet filter paper. Examine the two florets carefully with the hand lens and describe the general floral characters of each in botanical terms.

(b) Make large drawings of the ray floret and also the disc floret. Label the parts.

(c) Split open the corolla tube of a disc floret with a fine needle and spread the corolla to expose the androecium and the upper part of the gynoecium. Study with a hand lens the structure and position of stamens in relation to the style, stigma and petals. Make a neat labeled drawing of the parts found above the ovary.

(d) Draw the floral diagram of each floret.

(e) Write the floral formula of each floret.

(f) To which family does D-41 belong ?

(g) Name three floral characteristic of the specimen which places it the family mentioned in (f).

(h) Write the botanical names of two plants belonging to the said family.

Question 2 **[6]**

(a) Measure and pour 50 ml of solutions S_1, S_2 and S_3 into three petri dishes provided for the experiment, and label them accordingly.

(b) Cut 3 strips of a peeled potato measuring approximately 10 cms × 0.5 cm × 0.5 cm.

(c) Place the strips on a moist filter paper to prevent drying. Measure and record the exact length of each strip and fully immerse one in each of the three solutions S_1, S_2 and S_3. Cover the petri dishes and leave them as such for 30 minutes. Show the three petri dishes to the visiting examiner.

(d) After 30 minutes, remove the strips from the three solutions and dry them on a filter paper.

Measure and record their lengths fully in a tabulated form.

(e) Mention any other change that might have taken place in each strip.

(f) Explain these changes (if any).

(g) From your observations, suggest the nature of solutions S_1, S_2 and S_3.

(h) State situations found in the body of an animal and a plant which are similar to those found with regards to the potato strips in S_1 and S_3.

Question 3 **[4]**

(a) Cut thin sections of D-42 provided with a sharp razor or blade. Cut numerous sections and then select a good section. Stain it with safranin. Mount it in glycerine. Then observe it under the lower power of microscope and **show your slide to the visiting examiner.**

(b) Make a neat fully labeled drawing of the section.

(c) (i) Identify the section.

(ii) Give two reasons in support of your answer in c (i)

Question 4 **[5]**

Identify the given specimens A to E. State two reasons to support your answer in each case. Draw a neat labelled diagram of each specimen.

You will not be allowed to spend more than three minutes at each spot. You will hand over your answer sheets to the supervisor after the last observation, as this question will be attempted on separate continuation sheets.

Question 5

Show the following to the Visiting Examiner for assessment: -

Project **[7]**

Biology Practical File **[3]**

D-41: Capitulum or head of Sunflower OR Cosmos, OR Marigold of single ray florets.

D-42 : Preserved piece of dicot. Stem.

S_1 : 30% sucrose solution. S_2 : 5% sucrose solution. S_3 : Distilled water.

Spots: A : T.S. of ovary of mammal

B : Potato osmoscope

C : T.S. of spinal cord

D : T.S. of dicot. Leaf

E : V.S. of kidney