

St. Mary's School, Dwarka
Holiday Homework
Class XI
Subject: Biology

Objectives:

- To revise concepts.
- To develop skills to carry out research and develop scientific aptitude.
- To encourage learning through experience.

Instructions: Please do the entire work in the notebook, Scan it , out in a folder and mail

Assignment 1: Morphology of Flowering Plants

Activity 1: Take a portion of stem of 'Money plant'' and grow it in a transparent jar/glass.

- a. Notice the increase in length of the root and stem due to meristematic activity at the root and shoot tip. Draw the diagram of the root and label the regions of - meristematic activity, elongation and maturation.
- b. Observe at least 10 plants and study the arrangement of the leaves on the stem. Draw the diagrams and classify simple and compound leaves. Click the pictures and put it in a folder.
- c. Collect 5 leaves of different plants. Paste it on your notebook. Draw the diagram of each leaf and label all the parts of the leaf. Observe and compare the edges, margin, apex, lamina, venation, petiole, presence or absence of stipule, thickness, colour and texture of the leaves.
- d. Look for leafy vegetables in your fridge and prepare a list. Identify the type of venation and the type of margin seen.
- e. Ask your mother, the names of 5 leafy vegetables. Note down the names.
- f. Take a twig of mint and plant it in the pot. Observe the midrib, lamina, edges and apex. Draw the diagram and label these parts.
- g. Name a plant with a flattened stem performing the process of photosynthesis. Why do the leaves modify in xerophytic plants?
- h. What is the source of nutrition in trees during autumn when the leaves shed off? How can you use leaf litter? Why should we not burn dried leaves?
- i. Name three sources of stem which are directly useful to human beings. (at least one should be edible) Mention the use of the stem.

- j. Name three edible roots. In what forms are these roots consumed/included in the diet?
Discuss with your mother the various possibilities.

Assignment 2

Activity 2: Keep a potato aside in a dark place till the buds arise from the nodes. Cut them into 7 to 8 pieces and bury them in the soil. Water it every day. Notice the changes/growth above the soil every day and under the soil after a month.

- a. In the above plant, the leaves perform the process of photosynthesis. In which part does the storage of carbohydrates take place?
- b. In the above case, what is the special name assigned to storage organ? Draw and label the modification observed.
- c. Observe the arrangement of leaves and name the type of phyllotaxy in the above plant.
- d. Family Cucurbitaceae has some members which have modified their leaves into tendrils. What is the role of these modified structures?
- e. The Jungle Book and The Lion King take us on a virtual journey through the thick forests. The monkeys swiftly move holding the rope like structures which descend from the branches. How do these rope like structures help the tree?
- f. Sweet potato is a root whereas potato is considered a stem. Both are edible plant products, though assigned a different category. Comment.
- g. Indian food has lot of aromatic spices – dry and fresh. Name ten dry and five fresh spices. Which part of the plant do each part represent?
- h. Sugarcane juice is highly nutritious and tasty. Bamboo plant looks very similar to sugarcane but has no juice. What is the difference between the two?
- i. During Onam feast or south Indian weddings, the food is served on banana leaf. Its clean and biodegradable. The leaf is easily divided into many parts due to its venation. What type of venation does it possess?
- j. Some plants have roots on the stem. What is the function of these roots?

Assignment 3:

Soak some mixed whole legumes (black gram, moong, soya bean, kidney beans) overnight and wrap it in a wet cloth following morning. After few hours, the seeds germinate with emergence of radicle. Observe the seeds carefully and find out the answers from numbers

a to e:

- a. Hold the seeds between the index finger and thumb, on squeezing a drop of water oozes out of the pore near hilum. Name the pore.
- b. Which structure emerges out of the pore and what will it develop into?
- c. Take the sprouted black gram, remove the brown covering (the seed is divided into two parts), split the two portions of the seed and observe the embryonal axis. Draw the diagram of the seed observed by you and label all the parts.
- d. Name the brown covering and mention its function.
- e. The cotyledons contain reserve food for the growing embryo. How does the baby plant get food once the cotyledons perish?
- f. Fun watching a movie in a theatre is incomplete without the bucket of Pop Corn (maize). But sometimes a papery part of it gets stuck in the throat and hurts. What part of the seed is that which gets stuck in the throat?
- g. The best part of South Indian cuisine is the taste of coconut. Nariyal chutney is an all-time favourite for most of us. Which part of the plant is edible and used in the preparation of food?
- h. List five of your favourite fruits and identify the edible part as epicarp, mesocarp, endocarp or all of these.
- i. Find out the recipe of mango shake from your mother or from you tube and prepare mango shake for the entire family. Which part of the fruit did you use to make the shake?
- j. Prepare a fruit salad with at least five different fruits. Observe the placentation in transverse and longitudinal section. Make the list of the fruits and mention the placentation.

Assignment 4:

Collect four different flowers and two inflorescences. Observe the floral appendages carefully.

- a. Choose any two flowers from above and develop the floral formula for the same.
- b. With the help of the above floral formula, describe the flowers through the floral diagrams.
- c. Whenever you present a rose to anyone, which is the part of the flower that you hold?

- d. A florist puts the sticks of flowers together and prepares a bunch or a bouquet with it. He also has sticks which have multiple flowers on the single stick. If collection of flowers is a bunch or a bouquet, what is the single stick with more than one flower called?
- e. Take an orange and share it with your sibling. How many pieces do you think each one of you will get approximately? What type of ovary does an orange possess in terms of number of carpels?
- f. The Coconut plant has multiple economic importance. Which specific part is used to make ropes?
- g. List five of your favourite vegetables/fruits and assign them their families.
- h. Name five different spices which is – a leaf; bud; flower; bark; fruit; seed; root.
- i. Find out information about Allspice in terms of edible part, speciality, biological name and how is it used.