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Shikha Gupta
Shikha Nautiyal

SCIENCE OLYMPIAD

National Science Olympiad

2

Strictly according to the latest syllabus of Science Olympiad

Plants

Housing and Clothing

Food

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Human Body

Analogy

Classification

Ranking Test

The Gen X Series

A SUCCESS PACKAGE FOR ASPIRANTS OF SCIENCE OLYMPIAD

NATIONAL SCIENCE OLYMPIAD

Exploring the World of Science

Class 2

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V&S PUBLISHERS

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Publisher's Note

V&S Publishers, after the grand success of a number of Academic and General books, is pleased to bring out a series of *Science Olympiad books* under *The Gen X series – generating Xcellence in generation X* – which has been designed to focus the problems faced by students. In all books the concepts have been explained clearly through various examples, illustrations and diagrams wherever required. Each book has been developed to meet specific needs of students who aspire to get distinctions in the field of science and want to become Olympiad champs at national level.

To go through the exams successfully, the students need to do thorough study of topics covered in the *Olympiad syllabus and the topics covered in the school syllabus as well*. The Olympiads not only tests subjective knowledge but Reasoning skills of the students also. So students are required to comprehend the depth of concepts. The Olympiads check efficiency of candidates in problem solving. These exams are conducted in different stages at regional, national, and international levels. At each stage of the exam, the candidate should be fully prepared to go through the exam. Therefore, this test requires careful attention towards comprehension of concepts, thorough practice, and application of rules.

While other books in market focus selectively on questions or theory; V&S Science Olympiad books are rather comprehensive. Each book has been divided into five sections namely *Science, Logical Reasoning, Achievers section, Subjective section, and Model Papers*. The theory has been explained through solved examples. To enhance problem solving skills of candidates, *Multiple Choice Questions (MCQs)* with detailed solutions are given at the end of each chapter. Two *Mock Test Papers* have been included to understand the pattern of exam. A CD containing Study Chart for systematic preparation, Tips & Tricks to crack Science Olympiad, Pattern of exam, and links of Previous Years Papers is accompanied with this book. The books are also useful for various other competitive exams such as NTSE, NSTSE, and SLSTSE as well.

We wish you all success in the Olympiad and a very bright future in the field of science.

All the best

Contents

Section 1: Science

Section 2: Logical Reasoning

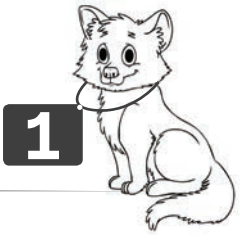
Section 3: Achievers Section

Section 4: Subjective Section

Section 5: Model Papers

Section 1: Science

Plants



Learning milestones:

- ❒ Types of plants
- ❒ Plants and their habitats
- ❒ Parts of a plant
- ❒ Uses of plants

We see different types of plants around us. Some plants are big and some are small. Some have flowers and some are completely green.

Types of Plants

Depending on their size, plants are of three types: Trees, shrubs, and herbs.

Trees

Big and tall plants are called trees. They have thick, strong, and woody stem. This stem is called the **trunk**. Trees have a long life and live for many years. For example: mango, banyan, peepal, and bamboo.

Some trees like neem and peepal shed their leaves every year. They are called **deciduous trees**. Some trees like mango ad banyan remain green throughout the year. They are called **evergreen trees**.

Shrubs

Shrubs are smaller than trees. They have thick stems but they are not as thick as the stems of trees. Shrubs are also called **bushes**. They are generally low in height and only live for a few years. China Rose (hibiscus), rose, cotton, and tulsi (basil) are examples of shrubs.

Herbs

Herbs are very small plants as compared to trees and shrubs. They have green and soft stems. Coriander, mustard, spinach, and mint are some example of herbs.

Many herbs live for a year or only a couple of months.


Climbers

A climber is a plant which has a weak stem. The stem coils around a support to grow straight. Money plant, bitter gourd, grape, and pea plant are a few examples of climbers. Climbers generally live for a few months, but some may live for years.



Creepers

A creeper is a plant which grows along the ground. It has weak and thin stems. Plants like cucumber, pumpkin, and watermelon are creepers.


Thorny Plants

Some plants which have thorns are called thorny plants. Cactus, acacia, and rose plants are all thorny plants.

Plant Habitat

Plants can be found both on land and in water. Different plants live in different habitats.

> **Do you know?**
> A habitat is a special place where a plant or animal lives.

Some plants grow on land, some in water, some in very hot regions, whereas some grow in very cold regions.

> **Do you know?**
> Short grasses usually grow in cold, dry climates on high mountains. Their leaves are small and tough-bladed that keep the water in.

Plants can be classified in various categories:

a. Plants that grow on land

   1. Plants that grow on mountains and hills: These plants are tall, sturdy, and coniferous.
      Examples: Cedar, Pine Spruce, conifers, fir


2. Plants that grow in warm places or plains: These plants have many leaves and are shady. Most of the trees that grow in warm places or plains shed leaves in autumn.

   Example: Banyan, Mango, Papaya, Neem





3. Plants that grow in deserts or dry regions: These plants are adapted to living in hot and dry conditions. They have thick stems and spines all over their body. They lose very little water.

   Example: Saguaro, Prickly pear, Agave, Hedgehog




b. Plants that grow in water

Plants that grow in water are called **aquatic plants**. They possess specific characteristics to survive in water.

Test Your Skills

1. Which plant will dry sooner in summer?



2. Which of these plants needs the most water?



3. Which of these is a seasonal plant?



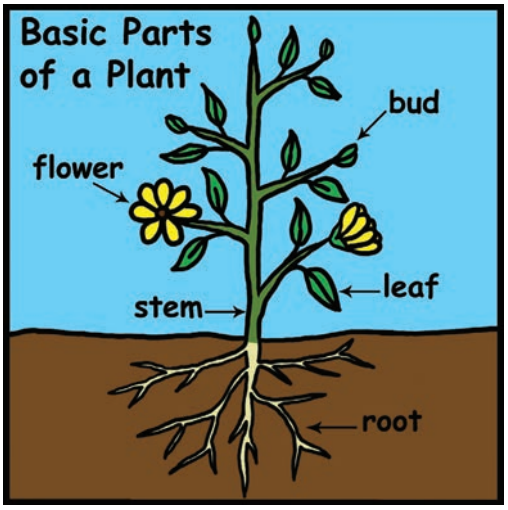
Parts of a Plant

A plant has many parts. The following are the various parts of a plant:

Root: They grow under the ground. Roots collect water and minerals from the soil for the plant.

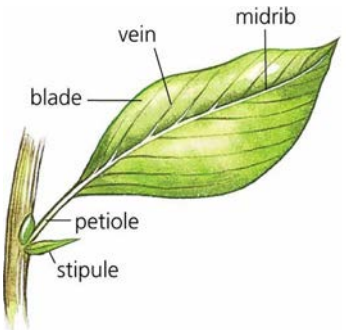
Stem: The stem grows above the ground. It is the main body of a plant. It transports food and water to all parts of the plant.

Leaves: They make food for the plant.



Do you know?

Green plants are the only living things that can produce food. They are able to do so because of the presence of a substance called chlorophyll in their leaves. Chlorophyll is green in colour. It is also responsible for imparting green colour to the leaves.



Flowers: They produce fruit.

Fruits: They have seeds in them. A baby plant grows from a seed. Plants need air, soil, water, and sunlight for their growth.

Test Your Skills

Define the functions of the following in one line:

1. Stem
2. Root
3. Leaves
4. Seed

Plants Give us Food

Most of our food comes from plants. Plants make their own food. Leaves are the food factories of the plants and the food is stored in different parts of the plant.

Roots: We eat the root of plants like radish, carrot, turnip, and beetroot.

Stems: We eat stems of plants like ginger, potato, and sugarcane.

Leaves: Leaves of some plants are eaten as vegetables. For example: cabbage, spinach, fenugreek, and mint.

Flowers: We eat flowers of plants like broccoli and cauliflower.

Seeds: We eat seeds of many plants like gram, beans, corn, and peas. Food grains like cereals and pulses are also seeds of the plants.

Fruits: Fruits of some plants are eaten as vegetables.

We all enjoy eating juicy fruits like mangoes, grapes, apples, and oranges.

Plants Give us Spices

Spices add taste and flavour to the food. Plants give us spices like chilies, peppercorns, cardamom, turmeric, and coriander seeds.

Plants Give us Oilseeds

We get oil from plants. Seeds containing oil are called oilseeds. This oil is used for various things, including cooking food and for applying on the body.

Plants Give us Tea, Coffee, Sugar, and Cocoa

We get tea from the leaves of a tea plant.

Coffee beans, from the coffee plant, are crushed to make coffee powder.

Sugarcane juice, from the sugarcane plant, is used to make sugar.

Seeds of cocoa tree are crushed to make cocoa powder.

Plants Also Give us:

- Plants give us oxygen. Trees and plants make the air fresh by giving out oxygen and taking in carbon dioxide.
- Plants add beauty to our surroundings.
- Plants provide shelter.
- Green trees and plants are home to many animals like monkeys, squirrels, birds, and insects. Plants provide fodder for animals.
- Plants give fibers. We get fibers like cotton, jute, flax, and coir from the plants. Cotton fibers are used to make cotton clothes. Jute fiber is used to make bags and ropes.
- Plants give us manure. Dry leaves are mixed with soil to make manure. Plants that grow in this soil are very healthy and strong.
- Plants give wood and many other things like medicine, paper, gum, and rubber.

Multiple Choice Questions

1. **Very small plants that have soft stems are called:**
   A. Herbs
   B. Trees
   C. Shrubs
   D. Climbers

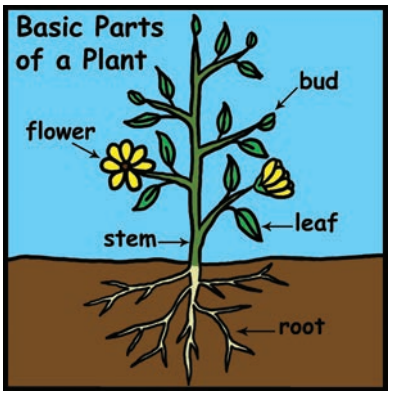
2. **Plant that creep on the ground:**
   A. Jackfruit
   B. Watermelon
   C. Rose
   D. Pineapple

3. **A tree stem is protected by an outer covering called:**
   A. Branch
   B. Cork
   C. Bark
   D. Trunk

4. **Brinjal plant is a:**
   A. Herb
   B. Shrub
   C. Tree
   D. None of these

5. **Which of these plant live for only one season?**
   A. Mango
   B. Guava
   C. Rubber plant
   D. Rice

Based on the image below answer question number 6–8



6. **Which part of the plant helps in transpiration?**
   A. Stem
   B. Leaves
   C. Roots
   D. Branches

7. **Which part of a plant helps in photosynthesis or the production of sugar and release of oxygen?**
   A. Roots
   B. Flowers
   C. Stem
   D. Leaves

8. **Which part of a plant helps in transporting the nutrients from the soil?**
   A. Roots
   B. Flowers
   C. Stem
   D. Leaves

9. **The correct order of a plant's life cycle is:**
   A. Seed, sprout, seedling, plant, and flower
   B. Sprout, seed, seedling, plant, and flower
   C. Flower, seed, seedling, sprout, and plant
   D. Flower, seed, seedling, and sprout

10. **Cactus plants are part of which of the following plant categories?**
   A. Aquatic plants
   B. Coniferous plants
   C. Deciduous plants
   D. Desert plants

11. **Which is the odd plant among the following?**

A. 

B. 

C. 

D. 

12. **Which of these is not a desert plant feature?**
   A. Spines
   B. No leaves
   C. Thick spongy stem
   D. Lots of flowers

13. Plants that grow on land are called:

A. Aquatic plants
B. Coniferous plants
C. Terrestrial plants
D. Xerophytes

14. Floating and fixed plants are a variety of:

A. Aquatic plants
B. Coniferous plants
C. Terrestrial plants
D. Xerophytes

15. Trees on plains do not have which of these characteristics?

A. Autumn shedding of leaves
B. Lots of stomata
C. Lots of leaves
D. Adapted to high heat and dry conditions

16. Which of these is not a thorny plant?

A. Jackfruit
B. Lemon
C. Bougainvillea
D. Prickly pear

17. Thorns of which of these plants are actually reduced leaves?

A. Rose
B. Lemon
C. Bougainvillea
D. Prickly pear

18. Broad, waxy leaves are found in:

A. Cactus
B. Banyan
C. Hibiscus
D. Water lily

19. Which of the following plants correctly matches the given description?

I am a small plant.
I have a number of roots growing from the base of my stem.
I am seasonal.

A. Wheat
C. Carrot
B. Mango tree
D. Rose