

## UNIT 2

# Classification of Living Organisms

### Learning Objectives

- ◆ Systems of classification
- ◆ Nomenclature
- ◆ Classification of plants
- ◆ Classification of animals



There are millions of living organisms around us. It is essential to classify them in various groups to make their study easy and systematic. **Classification is the process of grouping together organisms on the basis of similarities and differences.** Grouping of organisms helps to obtain maximum information about them. The branch of biology that deals with the systemic classification of living things is called taxonomy.

**Aristotle**, a Greek philosopher who is regarded as the father of biology, was the first person who proposed the method of classification of living organisms. Aristotle divided all living organisms known in his time into two categories—Plants and Animals. He also classified animals on the basis of their habitats—air, land, or water.

## SYSTEMS OF CLASSIFICATION

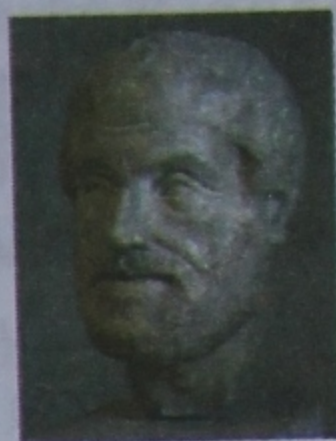
As more and more plants and animals continued to be discovered, it became increasingly difficult to put them into simple groups on the basis of where they lived or how they appeared from outside. So, taxonomists started to include other similarities such as internal appearances, anatomy, cell composition, etc. to classify living organisms.

There are two basic systems of classification.

### The Artificial System

This system tries to classify organisms on the basis of their simple features like habits and habitats, internal similarities, or the

## KNOW YOUR SCIENTIST



**Aristotle**

(384 BC – 322 BC)

**A**ristotle was a Greek philosopher, a student of Plato and teacher of Alexander the Great. He wrote on diverse subjects, including physics, metaphysics, poetry (including theater), biology and zoology, logic, rhetoric, politics, government, and ethics. Along with Socrates and Plato, Aristotle was one of the most influential of the ancient Greek philosophers. Some consider Plato and Aristotle to have founded two of the most important schools of Ancient philosophy. Aristotle's theory of classification is still considered as a milestone in the field of biology.

way they reproduce, etc. This system is based on mere observation.

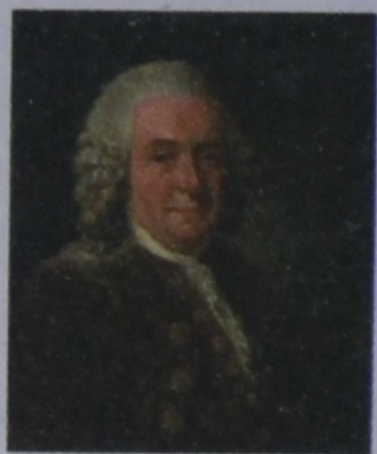
### The Natural System

In the natural system, more detailed features like developmental history, external and internal structures and their modifications, etc. are also taken into account. This system is considered as the modern system of classification.

It is a hierarchical system of biological classification in which a particular kind of plants or animals are grouped together bearing close resemblance to each other. Many such groups are again put into a bigger group of organisms based on some general similarities, and so on. Like this



## KNOW YOUR SCIENTIST



**Carolus Linnaeus**  
(1707 – 1778)

**L**innaeus was a Swedish botanist, physician and zoologist who laid the foundations for the modern scheme of nomenclature. He is known as the father of modern taxonomy.

He is also considered one of the fathers of modern ecology.

Linnaeus was born in southern Sweden, on May 23, 1707. He was groomed as a youth to be a churchman, walking in his father's path, but showed little enthusiasm for it. Instead his interest in botany made him the most renowned botanist of his time.

Linnaeus' last years were troubled by weak health, and he suffered from gout and tooth aches. A stroke in 1774 greatly weakened him, and two years later he suffered another, losing the use of his right side. He died on January 1778 in Uppsala, during a ceremony in the Uppsala Cathedral. He was buried in the cathedral.

the world of living organisms is arranged into a concentric system, in which different groups of organisms belonging to the same level form a bigger group of a higher rank, and so on. The similarities become more and more generalized as the rankings move from a lower level to a higher level. In other words, as we go down the ranking order, the similarities become more and more pronounced.

The major ranks from the highest to the lowest order in biological classifications are:

## Kingdom

It is the largest division of living beings. In the early days of classification, the living world was divided into two broad kingdoms of **plants** and **animals**. But the systematic growth of scientific studies showed it to be a very simplistic way of categorisation. The modern system of classification divides living organisms into five kingdoms —**monera**, **protista**, **fungi**, **plantae** (plants) and **animalia** (animals).

## Phylum/Division

Based on some basic similarities, the animal kingdom is divided into many groups called **phyla**, (singular: phylum). For example, all the animals bearing jointed legs such as ants, butterflies, lobsters and spiders are put into one phylum, Arthropoda. Similarly, the plant kingdom is divided into two divisions, i.e. flowering plants and non-flowering plants.

## Class

Organisms belonging to a phylum are again separated into different classes based on the principle of similarities and dissimilarities. For example, all animals which give birth to young ones are put under a class **mammalia** and all birds that lay eggs or fly are put under a class called aves. Similarly, there are different classes of plants in the plant kingdom.

## Order

Each class is divided into different groups called orders. Organisms of one order have



much more common features than the organisms of one class.

## Family

Under one order of organisms, there are many families. Organisms of one family have more common characteristics than the similarities they share with members of other families. For example, onion and garlic are from one family.

## Genus (plural 'genera')

Each family is divided into many genera. Organisms of one genus are much more similar than the other organisms of the same family. For example, cats and tigers are from the same family but they belong to different genera.

## Species

The basic unit of classification is the species. It includes a group of animals or plants that bear the closest resemblances and can breed among themselves. For example, the domestic cats we see in our houses belong to one species.

## NOMENCLATURE

Identification and naming of an organism is an important step in taxonomy. The system of naming an organism is called **nomenclature**.

In day-to-day life, we refer to animals by their common names in our native languages. But the common names of animals and plants vary widely from region to region and language to language. In India alone, we

## Classification of Lion

**Kingdom:** Animalia

**Phylum:** Chordata (Since it has a neural tube, it is called notochord.)

**Class:** Mammalia (It has mammary gland and has hair on the skin.)

**Order:** Carnivora (flesh eating)

**Family:** Felidae (It has retractive claws.)

**Genus:** Panthera

**Species:** Leo

(Biological name: Panthera leo)

have hundreds of languages and dialects. The same thing is called by different names in different languages. For example, the onion is known as *ponoru* in Assamese, *piyaz* in Hindi, *dungari* in Gujarati, *neerulli* and *ullagaddi* in Kannada, *ulli* in Malayalm, *piaja* in Oriya, and *vengayam* in Tamil.

It is natural that onion is known by different names all over the world. It may be convenient to use the local name for our day-to-day use, but it will become nearly impossible for any scientific study if a plant or animal does not have a uniform name of reference for scientists all over the world.

Keeping in view the problems in common names of organisms, biologists world over worked to devise a uniform system of classification throughout the world. A number of systems were proposed. Finally, Carolus Linnaeus, a Swedish



botanist, developed a system of **binomial** nomenclature. The system has been adopted throughout the world now and an organism is known by a particular scientific name. In binomial system of nomenclature, each organism has two parts in its name. The first part is known

as **generic name** and the second part is known as its **specific name**. For example, **Allium cepa** is the name of the onion plant. Here **Allium** is the name of the genus and **cepa** is the specific name. As per rule, the generic name always begins with a capital letter and the specific name begins with a small letter.

## EVALUATION-I

### Subjective Evaluation

#### A. Answer the following questions briefly:

1. What is classification?
2. What are the two systems of classification?
3. Which are the five kingdoms of living organisms?
4. Who is called the father of taxonomy?
5. What is nomenclature?

#### B. Answer the following questions in detail:

1. What is the advantage of a scientific name of a species?
2. What do you mean by binomial nomenclature?
3. What are the differences between the Artificial system of classification and the Natural system of classification?
4. Who was Aristotle? How did he divide all living organisms?
5. What constitutes a genus?

### Objective Evaluation

#### C. Fill in the blanks:

1. Each class is divided into different groups called .....
2. The basic unit of classification is the .....
3. The plant kingdom is divided into two divisions ..... and ..... plants.
4. .... is known as the father of modern taxonomy.
5. Carolus Linnaeus developed a system of ..... nomenclature.

#### D. Write True (T) or False (F) against the following statements:

1. Aristotle was a Swedish philosopher.
2. System of classification of living things is called taxonomy.



3. Each family is divided into many species.
4. Cats and tigers are from the same family.
5. Genera is the plural of genus.

**E. Tick (✓) the most appropriate answer:**

1. The smallest unit of classification is
 

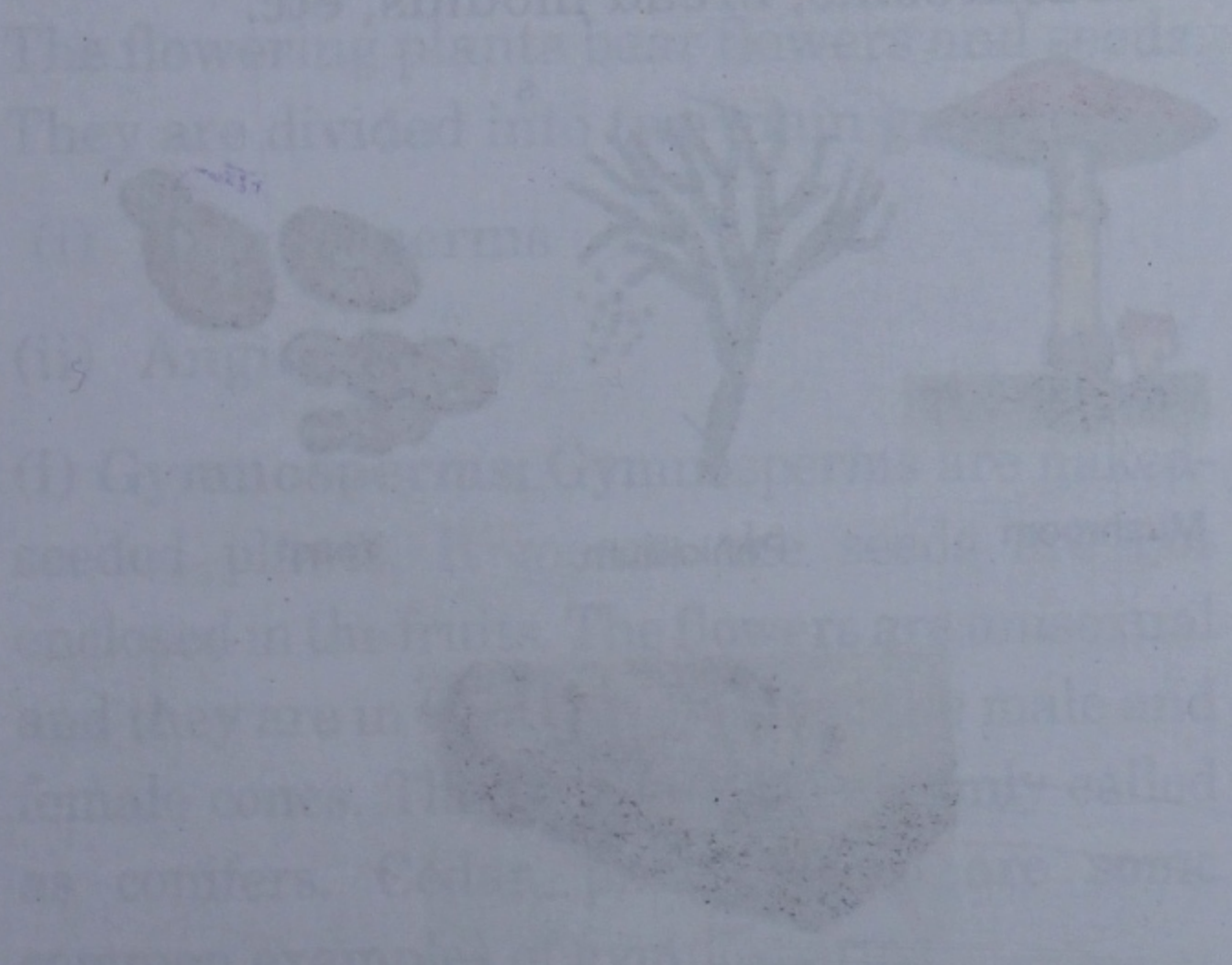
(a) family	(b) phylum
(c) genus	(d) species.
2. Under one order of organisms, there are many:
 

(a) classes	(b) families
(c) phylla	(d) kingdoms
3. The largest unit of classification is
 

(a) class	(b) kingdom
(c) order	(d) family
4. Linnaeus was a ..... botanist.
 

(a) British	(b) French
(c) Swedish	(d) Indian
5. Onion and garlic are from one
 

(a) family	(b) order
(c) genus	(d) phylla





## CLASSIFICATION OF PLANTS

There are various kinds of plants in this world which vary from microscopic ones to large trees. Some of them show distinct parts like roots, stems, leaves, buds and others show only leaves and stem, not bearing any flowers or buds. Some may be non-green and devoid of leaves.

Broadly, plants can be divided into two main groups:

- (i) The non-flowering plants (Cryptogams)
- (ii) Flowering plants (Phanerogams)

The non-flowering plants do not bear flowers or seeds. They are grouped under three groups:

1. Bacteria, Algae, Fungi (Thallophyta).
2. Mosses (Bryophyta).
3. Ferns (Pteridophyta).

### 1. Bacteria, Fungi, Algae (Thallophyta)

They are mostly microscopic and do not bear roots, stems and leaves.

#### Bacteria:

- Microscopic
- Unicellular
- They occur everywhere— air, water, soil, food.
- Some may cause disease to humans and animals but others are highly beneficial.

#### Algae:

- Found in water.
- They may be unicellular (Chlamydomonas) or filamentous (Spirogyra).
- They can prepare food as they contain chlorophyll.

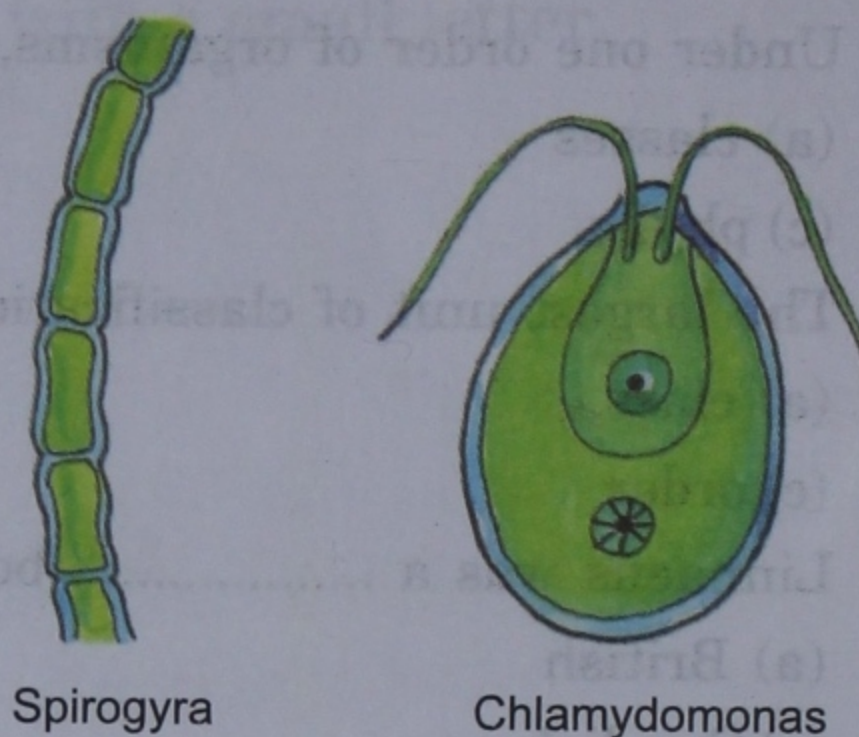
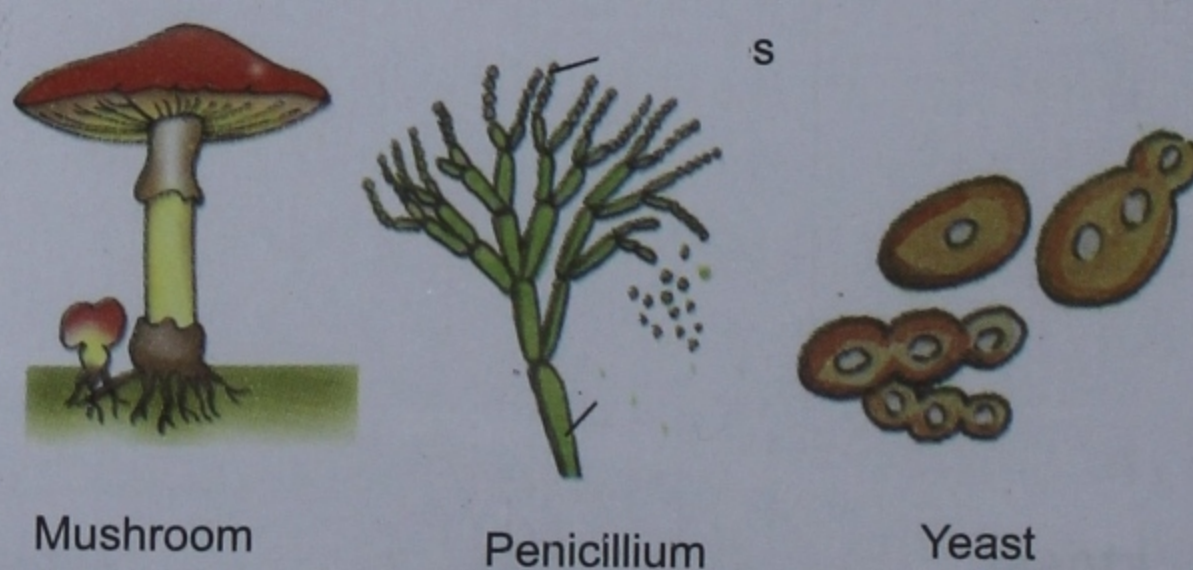


Fig. 2.1 Algae

#### Fungi:

- May be unicellular or multicellular.
- They lack chlorophyll so they cannot prepare their food.
- They live on dead and decaying matter so are called saprophytes like mushrooms, bread moulds, etc.



Bread mould

Fig. 2.2 Fungi



## 2. Mosses (Bryophyta)

- Found in moist places on damp soil, damp walls and on the bark of trees.
- They have stems and leaves but no strong roots. Root like structures called rhizoids are present.
- They reproduce by spores.



Fig. 2.3 Mosses

## 3. Ferns (Pteridophyta)

- They are green plants found in cool shady places.
- Bears roots, stems and leaves but do not produce flowers and seeds.



Fig. 2.4 Ferns

Under surface of a leaf bears spores which produce new plants.

The flowering plants bear flowers and seeds. They are divided into two main groups:

(i) Gymnosperms

(ii) Angiosperms

(i) **Gymnosperms:** Gymnosperms are naked-seeded plants. It means the seeds are not enclosed in the fruits. The flowers are unisexual and they are in the form of cones; the male and female cones. The plants are commonly called as conifers. Cedar, pine, ginkgo are some common examples of gymnosperms.



Fig. 2.5 A gymnosperm plant (Cycas)

(ii) **Angiosperms:** These are highly evolved plants. The seeds are enclosed in the ovary or fruit. The plants have well-developed roots, stems and leaves. Flowers are the reproductive parts.

Angiosperms are further classified on the basis of the number of seed leaves or cotyledons of the seeds.

(a) **Monocotyledons:** These are plants in which seed has only one cotyledon. All grasses, maize, wheat and rice are examples of monocotyledons.

(b) **Dicotyledons:** These are the plants in which the seed has two cotyledons. Rose, pea, balsam, bean, most fruits and vegetable plants are dicotyledon plants.

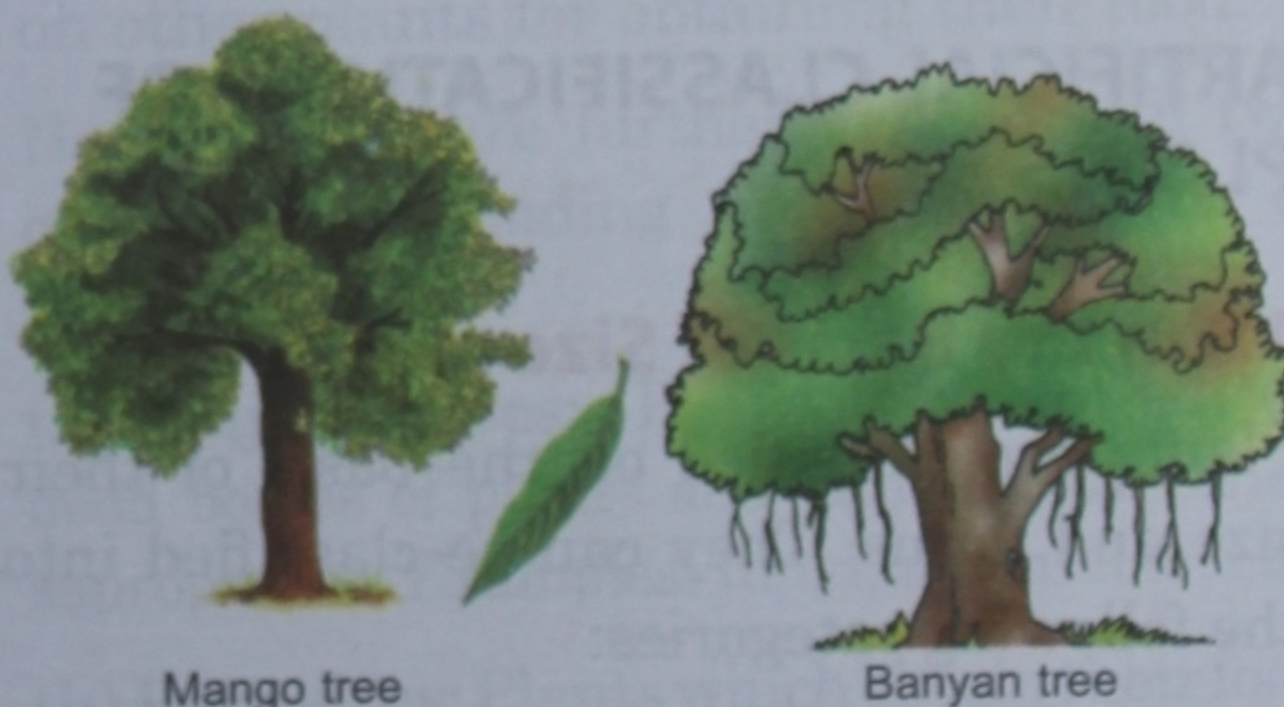


Fig. 2.6 Angiosperm trees



**TABLE 2.1****Major groups of non-flowering and flowering plants.**

Major Groups	Examples
<b>Non-flowering plants</b>	
Thallophyta	
1. Bacteria	E.coli, Streptococci
2. Algae	Chlamydomonas, Spirogyra
3. Fungi	Rhizopus, Mucors Yeast, Mushroom
Bryophyta	Liverworts
Pteridophyta	Ferns, Horse-tails.
<b>Flowering plants</b>	
Gymnosperms	Cycas, Pine, Fir
Angiosperms	Mango, Sugarcane, Grass.

**ACTIVITY 2.1**

Take a slice of bread and sprinkle water on it. Keep it for 2-3 days and observe. You will see fur like white cottony substance which gradually turns to greenish in colour. This is the fungus Rhizopus, which is actually bread mould.

usually short. Examples: Radish, mustard, carrot, pea, etc.

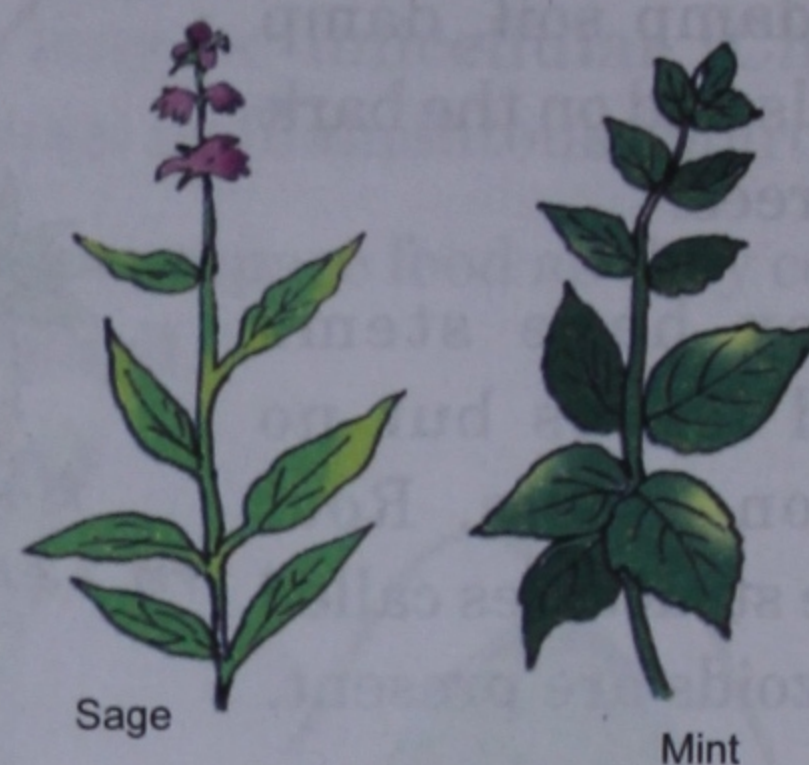


Fig. 2.7 Herbs

**(ii) Shrubs:** These plants are bushy and woody. There are many branches but there is no main stem or trunk in shrubs. Shrubs are medium sized plants. Examples: China rose, jasmine, lemon, brinjal, lady's finger, gram, etc.

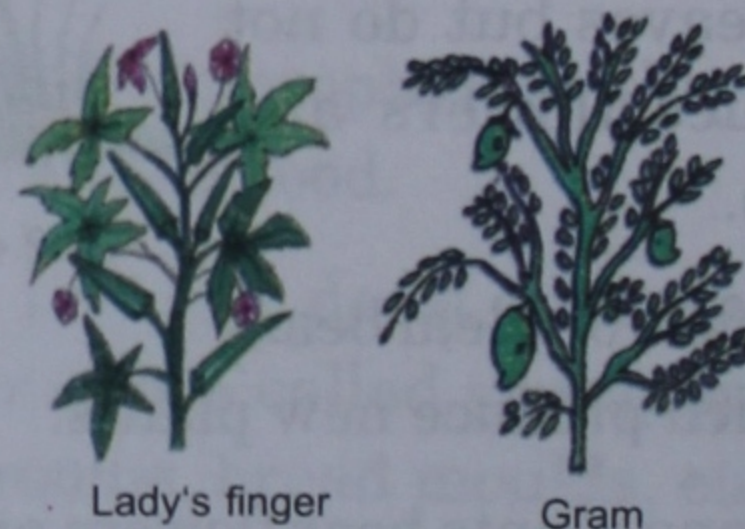


Fig. 2.8 Shrubs

**(iii) Trees:** Trees are tall plants with a hard stem. The stem gives out many branches at various heights. Most of the trees are dome-shaped. However, conifers are cone-shaped.



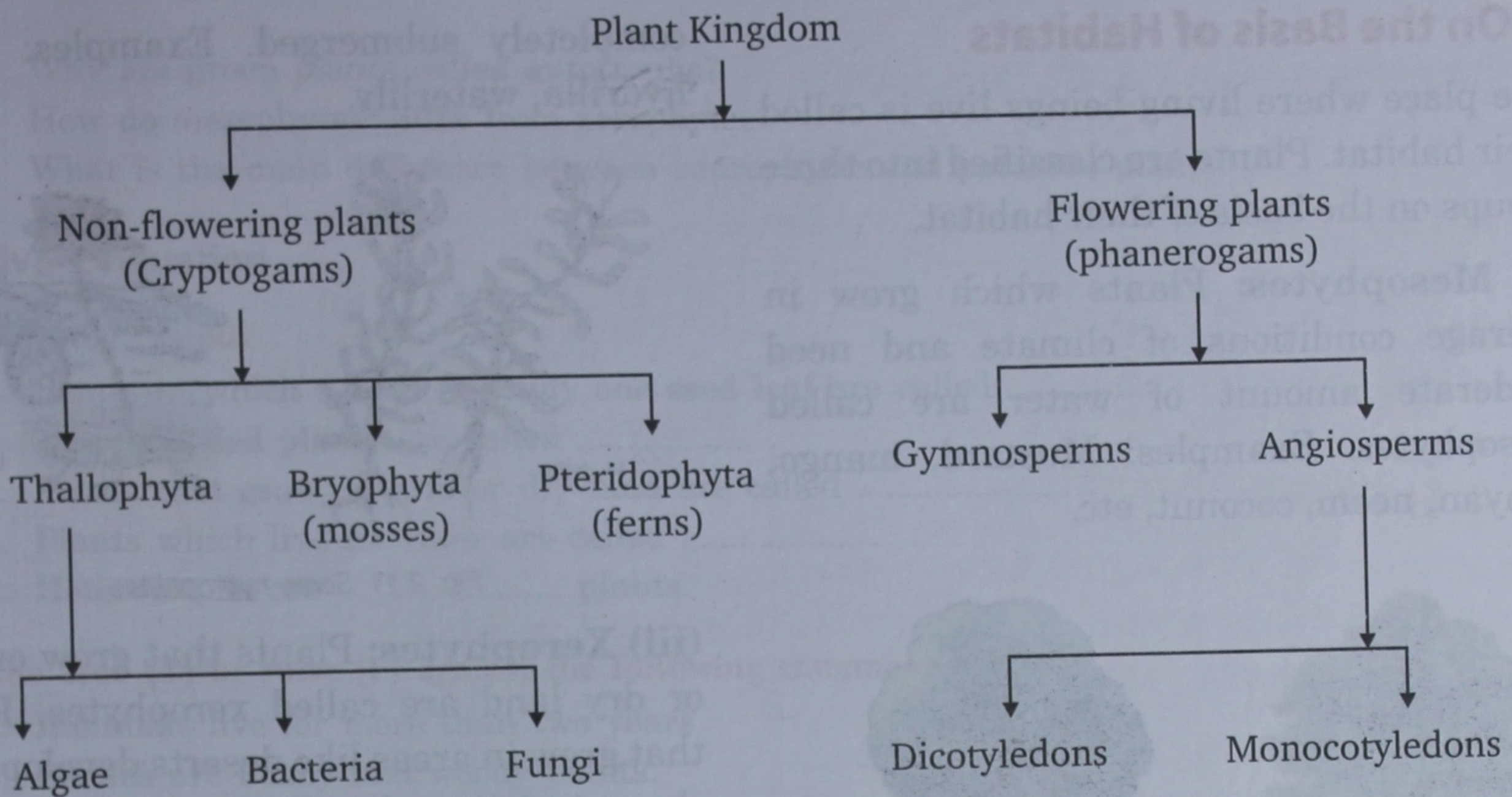
Fig. 2.9 Tree

**ARTIFICIAL CLASSIFICATIONS OF PLANTS****1. On the Basis of Size and Form**

Plants are classified on the basis of their size and forms. They can be classified into the following categories:

**(i) Herbs:** These are green plants with soft stems. The lifespans of these plants are





## 2. On the Basis of Lifespan

Depending upon the duration of life cycle, there are three kinds of plants:

**(i) Annuals:** Some plants take one season or one year to complete their life cycle. They grow, produce flowers and seeds and die in one year, e.g. rice, wheat, gram, pea, etc.

**(ii) Biennials:** These plants complete their life cycle in two years. In the first year, they grow and store food. In the second year, they produce flowers and seeds and then die. Examples: Radish, carrots, turnip, etc.

**(iii) Perennials:** They live for more than two years. Their life does not end after producing seeds. They produce flowers, fruits and seeds every year. Many perennials grow till death. Some even live for more than 400 years or so. Examples: Mango, guava, china rose, neem, banyan, etc.

## 3. On the Basis of Mode of Nutrition

On the basis of their mode of nutrients, plants are divided into two categories:

**(i) Autotrophs:** Green plants which make their own food through the process of photosynthesis are called autotrophs. Examples: china rose, fern, mango, etc.

**(ii) Heterotrophs:** They are non-green plants and so cannot make their own food. They are called heterotrophs. They depend on other plants for obtaining their food.

Heterotrophs are further divided into two categories depending upon the source of their food.

**(a) Saprophytes:** Plants which feed on dead bodies of plants and animals are called saprophytes. Examples: fungi, mushroom, etc.

**(b) Parasites:** Plants which obtain their food from other living plants are called parasites. Examples: Cuscuta (Amarbel), viscum.



## 4. On the Basis of Habitats

The place where living beings live is called their habitat. Plants are classified into three groups on the basis of their habitat.

(i) **Mesophytes:** Plants which grow in average conditions of climate and need moderate amount of water are called mesophytes. Examples: Mustard, mango, banyan, neem, coconut, etc.

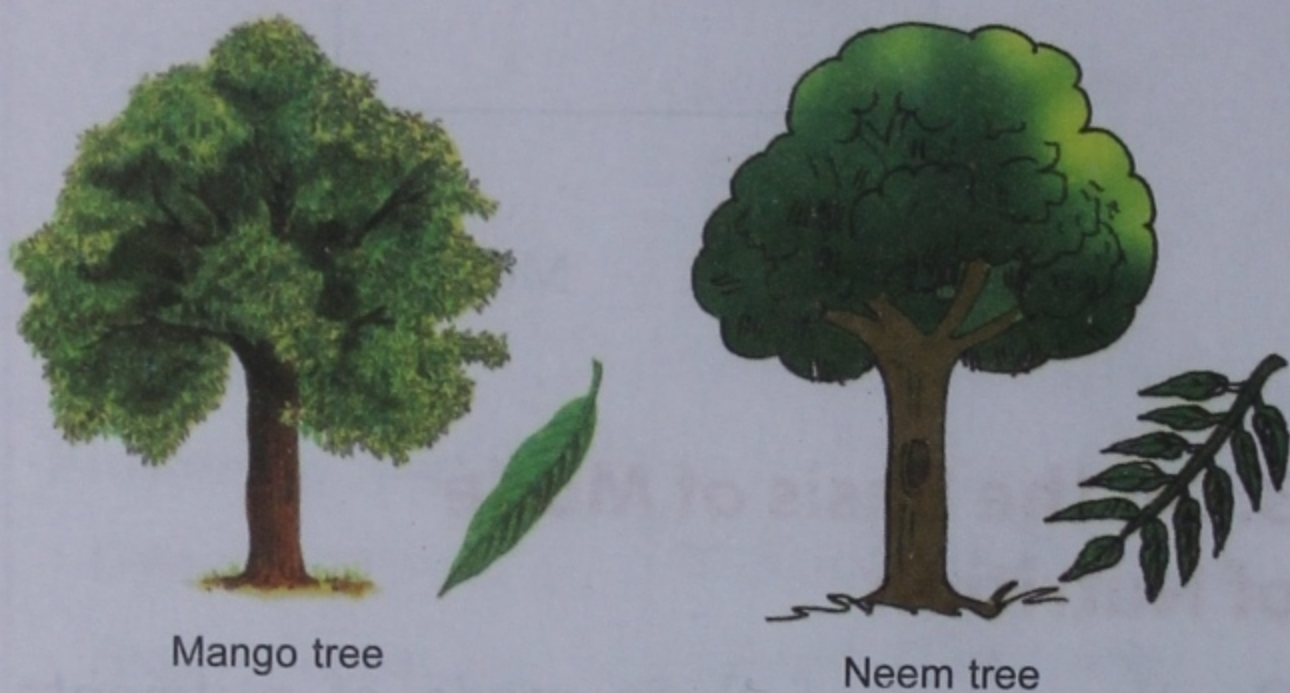


Fig. 2.10 Some mesophytes

(ii) **Hydrophytes:** Plants which live in water are called hydrophytes. Some hydrophytes float on water. Some are rooted to the soil in the water and some are

completely submerged. Examples: Lotus, hydrilla, waterlily.

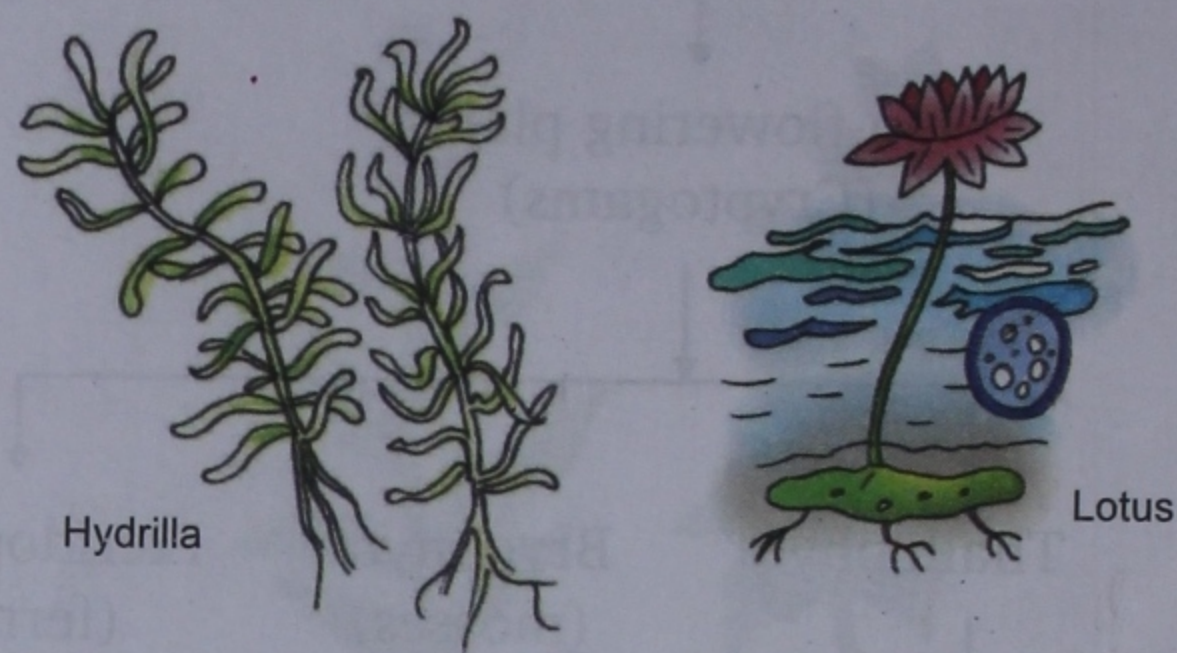


Fig. 2.11 Some hydrophytes

(iii) **Xerophytes:** Plants that grow on arid or dry land are called xerophytes. Plants that grow in areas like deserts develop some characteristics that help them adapt in the dry climate. Examples: Cactus, acacia, calotropis, prickly pear, etc.



Fig. 2.12 A xerophyte

## EVALUATION-II

### Subjective Evaluation

#### A. Answer the following questions briefly:

1. Name some non-flowering plants.
2. What are cryptogams?
3. What are the two broad divisions of the plant kingdom?
4. What are thallophytes?
5. What are angiosperms?

#### B. Answer the following questions in detail:

1. What are the differences between gymnosperms and angiosperms?
2. What are three divisions of plants on the basis of their lifespan?



3. Why are green plants called autotrophs?
4. How do mesophytes differ from xerophytes?
5. What is the main difference between saprophytic and parasitic plants?

## Objective Evaluation

### C. Fill in the blanks:

1. Plants in which a seed has only one seed leaf are called .....
2. Naked-seeded plants are called .....
3. Plants that grow on arid or dry land are called .....
4. Plants which live in water are called .....
5. Heterotrophs are ..... plants.

### D. Write True (T) or False (F) against the following statements:

1. Biennials live for more than two years.
2. Shrubs are bushy and woody plants.
3. Mango is a biennial tree.
4. Flower-bearing plants are called angiosperms.
5. Cuscuta is a parasitic plant.

### E. Tick (✓) the most appropriate answer:

1. Which one of the following is not a shrub?
 

(a) jasmine	(b) lemon
(c) brinjal	(d) carrot
2. Mosses come under the group of:
 

(a) thallophyta	(b) bryophyta
(c) pteridophyta	(d) none
3. Neem and banyan come under \_\_\_\_\_ category of plants.
 

(a) annual	(b) biennial
(c) perennial	(d) none
4. Which of the following is a xerophyte?
 

(a) lotus	(b) hydrilla
(c) acacia	(d) mustard
5. Perennial plants live for more than
 

(a) one year	(b) two years
(c) three years	(d) four years

### F. Give one example of .....

1. Annual plant .....
2. Saprophytic plant .....
3. Non-flowering plant .....
4. A xerophyte plant .....
5. A water plant .....



## CLASSIFICATION OF ANIMALS

In the natural system of classification, the animal kingdom is divided into a number of large groups called phyla (singular: phylum). These animals broadly fall into two categories — invertebrates and vertebrates.

### Invertebrates

Animals which do not possess a vertebral column are called invertebrates. Examples: hydra, earthworm, cockroach, spider, snails, etc.

### Vertebrates

Animals which possess a backbone or vertebral column are called vertebrates. Vertebrates are divided into five major classes—Amphibia, Reptilia, Aves and Mammalia. Fish, frog, birds and men are vertebrates. All the vertebrate animals belong to the sub-phylum vertebrata of phylum chordata.

**TABLE 2.2**

#### Differences in vertebrates and invertebrates

Vertebrates	Invertebrates
1. They have an internal skeleton	They do not have an internal skeleton.
2. The backbone is present	The backbone is absent.
3. A tail is usually present	Tail is absent
4. They have two pairs of limbs.	They have three or more pairs of limbs if present.

## Some Major Invertebrate Phyla

### 1. Protozoa

- Single-celled microscopic animals.
- Occur everywhere—in soil, water and also inside the bodies of other animals.
- Some may also cause diseases like malaria, amoebiasis, etc.

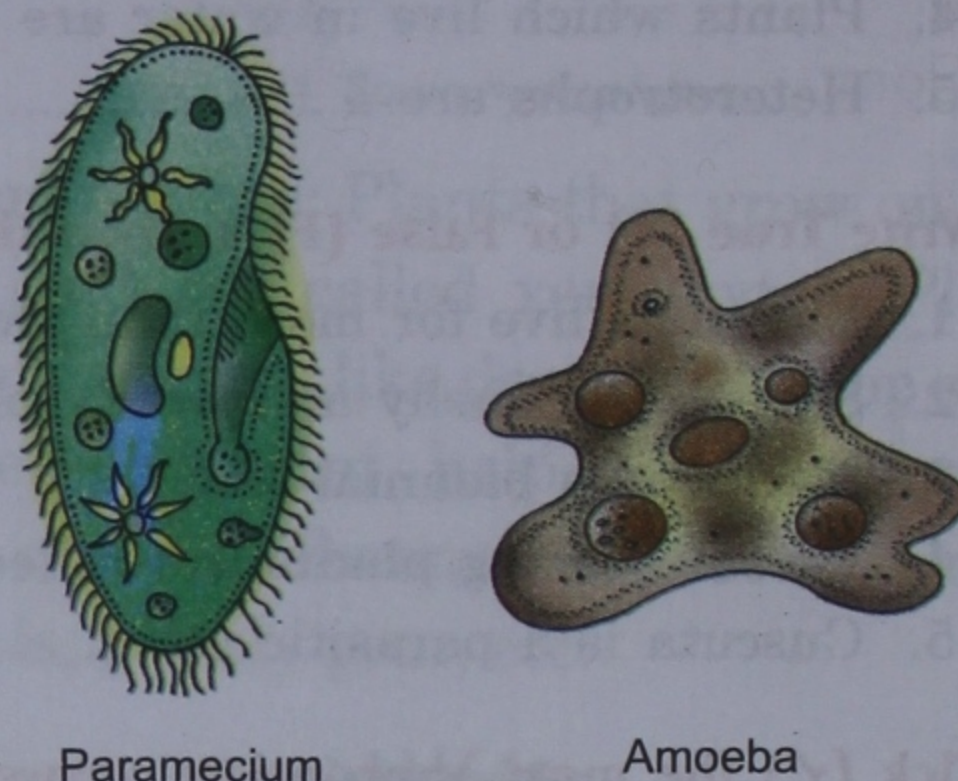


Fig. 2.13 Protozoa

### 2. Porifera

- Body is porous with numerous pores present all over the body.
- Mostly marine but some are found in fresh water.
- Stationary as they remain attached to the sea bottom.
- Large opening called osculum present to allow the entry of water, e.g. Sponge.



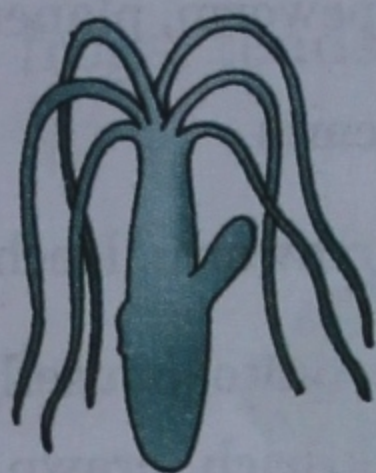
Sponge

Fig. 2.14 Porifera



### 3. Coelenterata (Cnidaria)

- Body sac-like with one opening in the mouth.
- Mouth is surrounded by finger-like structures called tentacles for catching food. Mostly marine and attached to the sea bottom as in hydra and sea anemone.
- Some are mobile, e.g. Hydra, Jelly fish.



Hydra

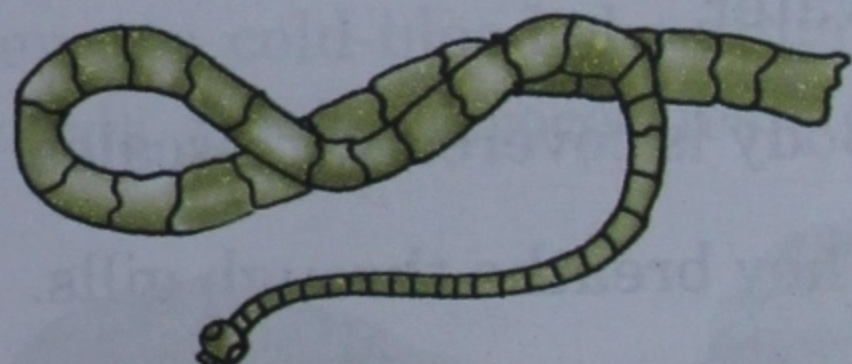


Jelly fish

Fig. 2.15 Coelenterata

### 4. Platyhelminthes (Flatworms)

- Body thin and flattened.
- They are mostly parasites.
- Mouth is the only opening with hooks and suckers, e.g.. Tapeworm, Planeria.



Tepeworm

Fig. 2.16 Platyhelminthes

### 5. Nemathelminthes (Roundworms)

- Long, cylindrical and un-segmented.
- The body has two openings, the mouth and anus.

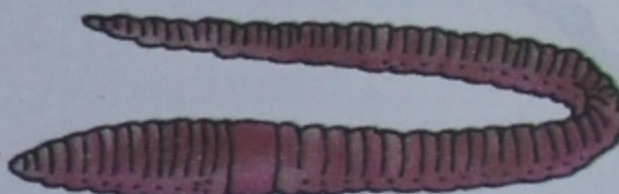
- Mostly parasitic but some are free living e.g. Ascaris.



Fig. 2.17 Roundworm

### 6. Annelida

- Body is segmented.
- They have a body cavity.
- They have well developed digestive system with a mouth and anus, e.g. Earthworm, Leech.



Earthworm



Leech

Fig. 2.18 Annelida

### 7. Arthropoda

- Body is divided into head, thorax and abdomen.



Crab



Buttefly

Fig. 2.19 Arthropoda



- Body is covered with exoskeleton.
- They have jointed legs.

### 8. Mollusca

- Soft body which is not segmented.
- Body is covered with a shell.
- They have muscular foot for locomotion. e.g. Snail, Octopus.

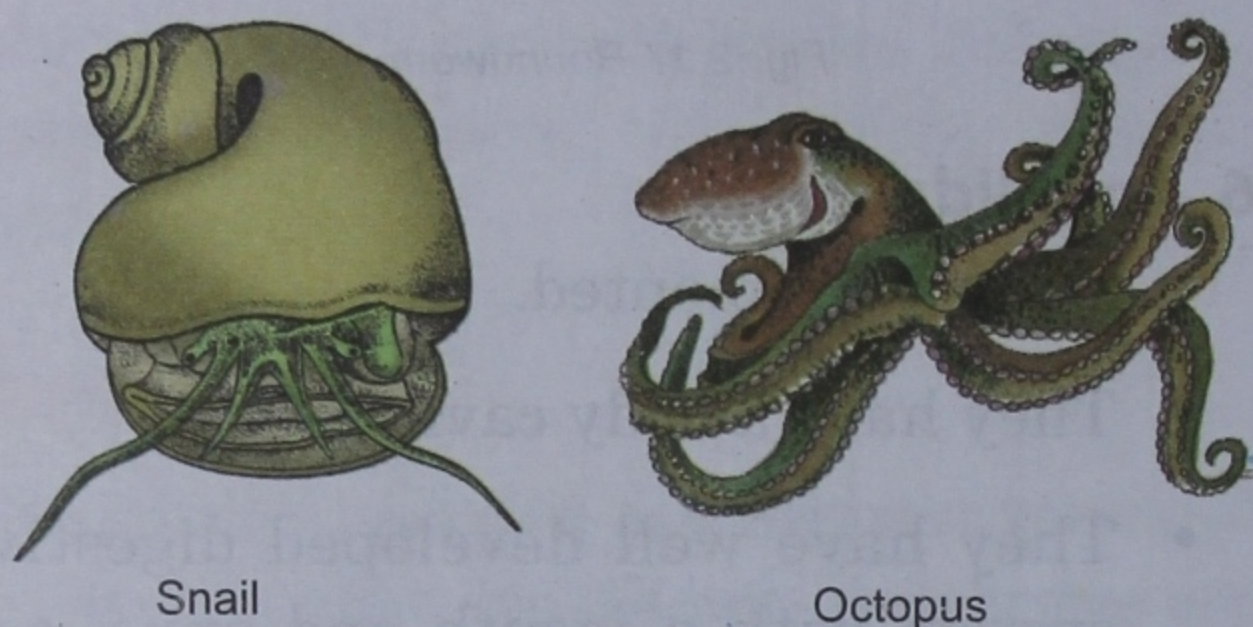


Fig. 2.20 Mollusca

### 9. Echinodermata

- Mostly marine.
- Body is spiny.
- Body is star-like or ball-like;

Locomotion by tube feet, e.g. Starfish, Sea urchin.

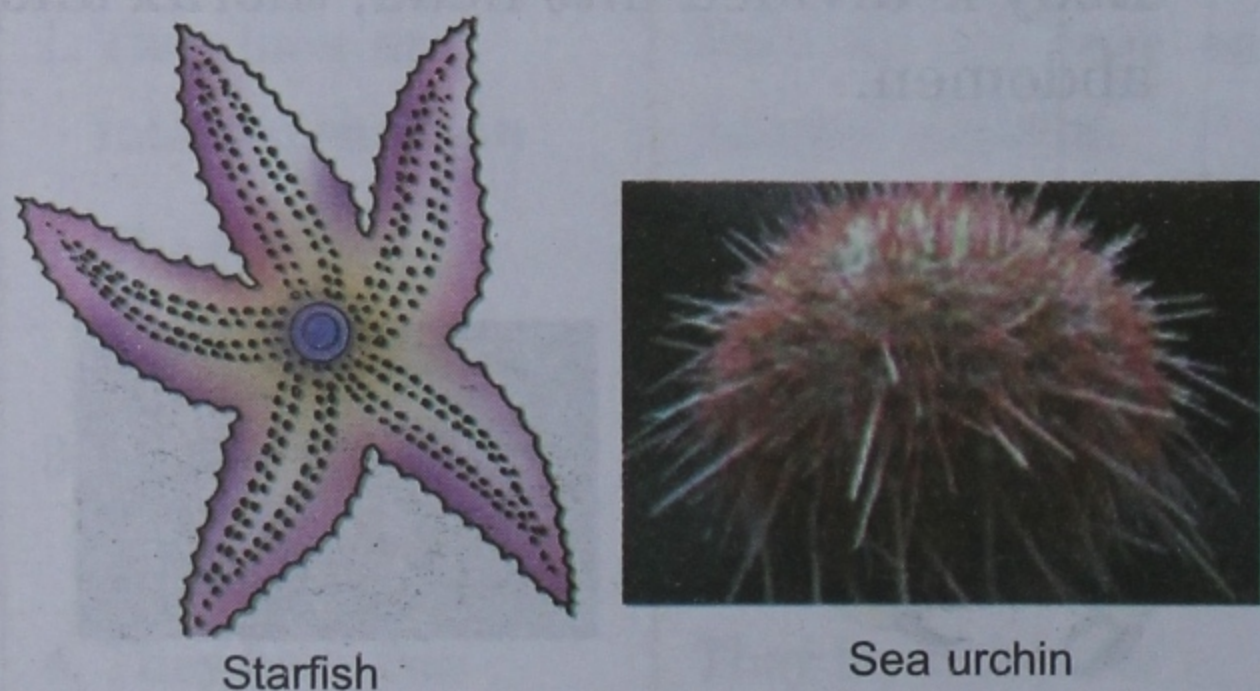


Fig. 2.21 Echinodermata

**TABLE 2.3**  
**Invertebrates**

Major Invertebrate Phyla	Example
1. Protozoa	Amoeba, paramecium
2. Porifera	Sponges (sycon)
3. Coelenterate	Hydra, jelly fish, sea anemone
4. Platyhelminthes	Tapeworm, planeria
5. Nematelminthes	Ascaris
6. Annelida	Earthworm, leech
7. Arthropoda	Mosquito, housefly, cockroach, prawn, crab
8. Mollusca	Snail, octopus
9. Echinodermata	Starfish, sea lily, sea urchin.

### Major Vertebrate Phyla

#### 1. Pisces

- Streamlined body to cut through water.
- Body is covered with scales.
- They breathe through gills.



Fig. 2.22 Fish



- They are cold-blooded animals e.g. Rehu, Hilsa, Pomfret.

## 2. Amphibia

- They can live both on land and in water.
- Breathes with lungs when on land and with skin when in water.
- They lay eggs in water.
- They are cold-blooded animals, e.g. frogs, toads, salamanders.



Frog

Fig. 2.23 Amphibia

## 3. Reptiles

- They have dry scaly skin.
- Breathe through lungs.
- They lay eggs.
- They are cold-blooded animals, e.g., Lizards, Snakes Crocodiles.



Crocodile



Tortoise

Fig. 2.24 Reptiles

## 4. Aves

- Streamlined body to cut through air.
- Body covered by feathers.
- They fly with their wings which are modified limbs.
- They are warm-blooded animals.
- They lay eggs, e.g. Crow, Sparrow, Emu, Ostrich.



Cock



Pigeon



Sparrow

Fig. 2.25 Aves

## 5. Mammals

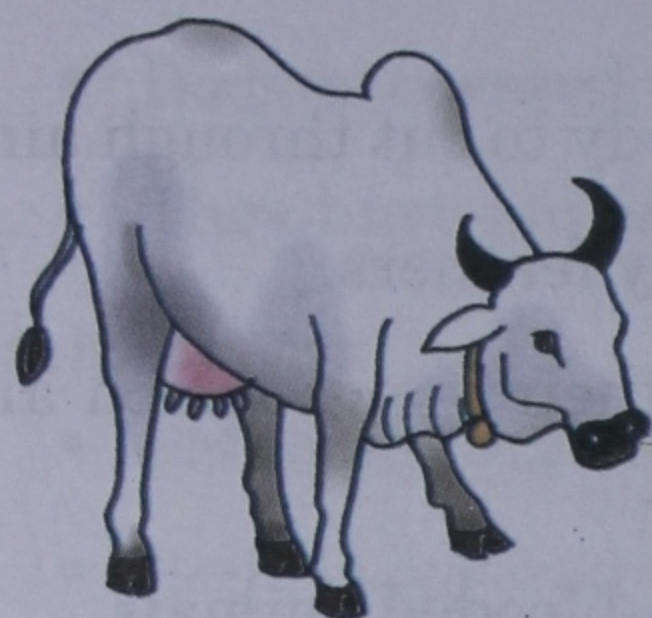
- Body surface is covered with hair.
- Females have mammary glands to nourish their young ones.
- They breathe through lungs.
- Warm-blooded animals, e.g. cow, dog, cat.



TABLE 2.4

## Major Phylum of Animal vertebrates

Major Phylum	Example
1. Pisces	Rehu, mrigala, shark, mackerel
2. Amphibia	Toads, frogs, salamander.)
3. Reptiles	Lizards, crocodiles, snakes, tortoises.
4. Aves	Crow, sparrow eagle, peacock.
5. Mammals	Tiger, lion, dog, cow, whale.



Cow



Cat



Dog

Fig. 2.26 Mammals

## LET US SUMMARISE

- Plants are broadly classified as flowering and non-flowering plants.
- The flowering plants are divided into two groups
  - Gymnosperm
  - Angiosperm
- Based on habitats, plants may be classified as mesophytes, hydrophytes and xerophytes.
- Based on their mode of nutrition, plants may be autotrophs and heterotrophs.
- Based on their size, plants may be herbs, shrubs and trees.
- Animals are broadly divided into two groups
  - Invertebrates
  - Vertebrates
- Vertebrates are animals with backbone, invertebrates are animals without backbones.
- Vertebrates are divided into five classes. They are pisces, aves, amphibia, reptilia and mammalia.
- Pisces are aquatic animals with streamlined body, covered with scales. They breathe with gills.
- Amphibia are cold-blooded animals, can live on both land and water.
- Reptilia are cold-blooded animals with scales on their body.
- Aves are warm-blooded. The body is covered with feathers.
- Mammalia are warm-blooded animals. They have hair on their body and they reproduce their young ones.
- Taxonomy is the branch of biology that deals with identification, nomenclature and classification of an organism.



**EVALUATION-III****Subjective Evaluation****A. Answer the following questions briefly:**

1. What are the two broad divisions of animal kingdom?
2. Name three invertebrates.
3. Name the five major divisions of vertebrates.
4. Name an amphibian and a reptile.
5. Give two examples of mollusca.

**B. Answer the following questions in detail:**

1. Differentiate between invertebrates and vertebrates.
2. Name the category of animals which have no backbone and write their features.
3. What are the special features of reptiles?
4. How do fish exchange gases?
5. How do warm-blooded and cold-blooded animals differ?

**Objective Evaluation****C. Fill in the blanks:**

1. Invertebrates with jointed legs belong to .....
2. An animal that gives birth to young one is called .....
3. Fish breathe through .....
4. .... can live on both land and water.
5. .... can fly in air.

**D. Name the phyla to which the following animals belong:**

1. Scorpion
2. Leech
3. Oyster

**E. Find the odd one out:**

- |              |                 |                 |               |
|--------------|-----------------|-----------------|---------------|
| 1. (i) ant   | (ii) cocroach   | (iii) butterfly | (iv) scorpion |
| 2. (i) bat   | (ii) monkey     | (iii) whale     | (iv) peacock  |
| 3. (i) snail | (ii) jelly fish | (iii) octopus   | (iv) squid.   |

**F. Tick (✓) the correct answer:**

1. Which of the following is a mammal?
 

(a) eagle	(b) lizard
(c) whale	(d) frog
2. Which of the following is not a reptile?
 

(a) salamander	(b) crocodile
(c) lizard	(d) tortoise



3. Tick the group amoeba belongs to—  
(a) annelida (b) mollusca  
(c) protozoa (d) porifera
4. Earthworm and leech are from the group of:  
(a) echinodermata (b) mollusca  
(c) annelida (d) coelenterata
5. Which of the following is an amphibian?  
(a) eagle (b) toad  
(c) cow (d) whale
6. Animals which possess a vertebral column are called.  
(a) vertebrates (b) invertebrates  
(c) thallophytes (d) bryophytes
7. Tentacles are present in  
(a) sponges (b) hydra  
(c) snail (d) frog
8. Which animal can live both on land and in water?  
(a) snake (b) fish  
(c) frog (d) crocodile
9. Animals whose body is divided into head, thorax and abdomen are called  
(a) arthropods (b) sponges  
(c) annelids (d) molluscs
10. Single-celled microscopic animals are called  
(a) porifera (b) arthropoda  
(c) protozoa (d) Annelida..