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The Living World

LECTURE

4

Taxonomical Aids





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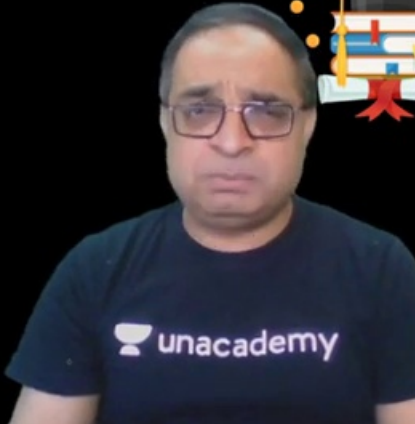
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Dr. Sachin Kapur
M.Phil, Phd.

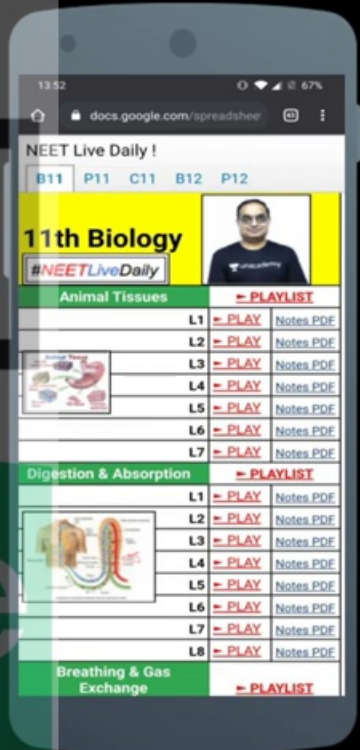
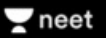


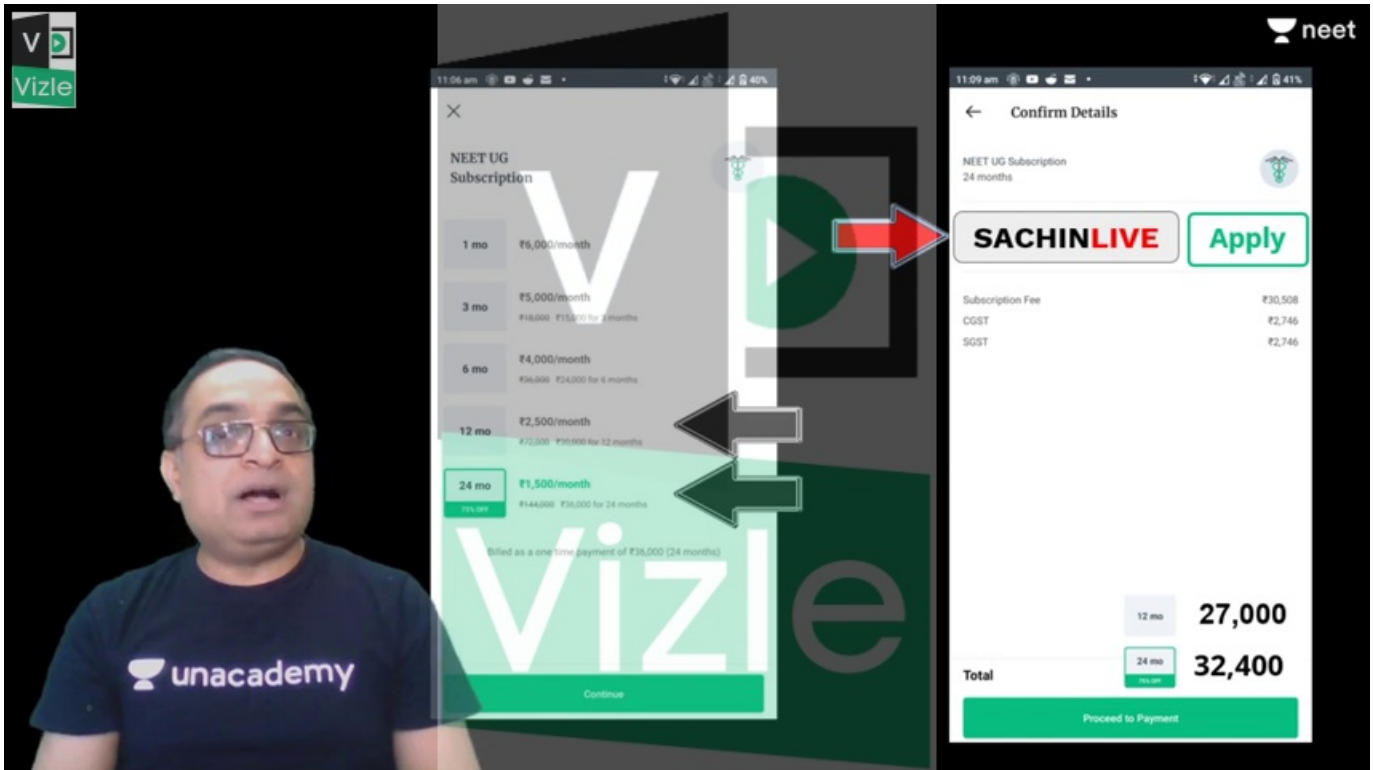
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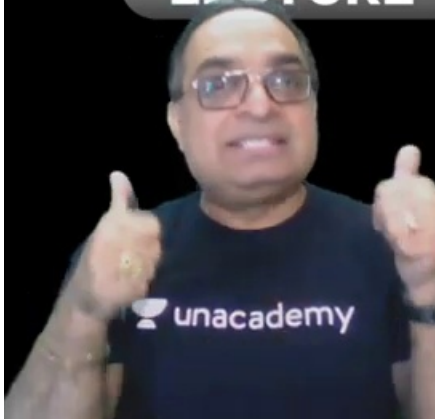
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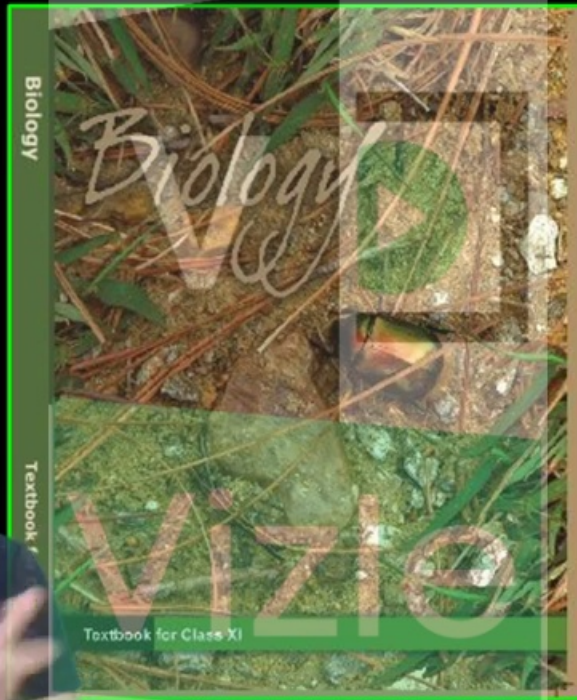
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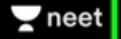
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Taxonomical Aids

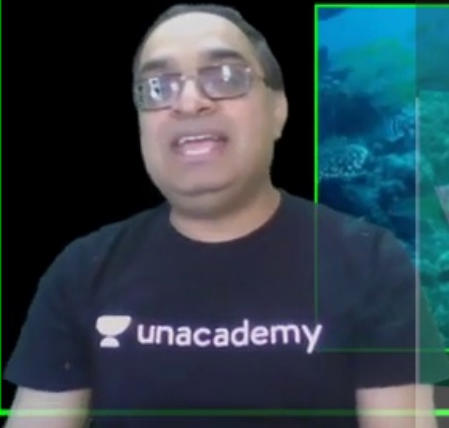






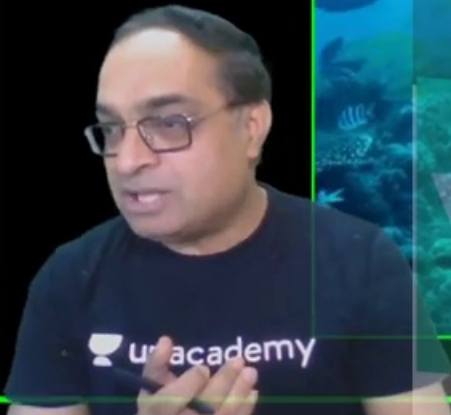
Unit 1

Diversity In The Living World



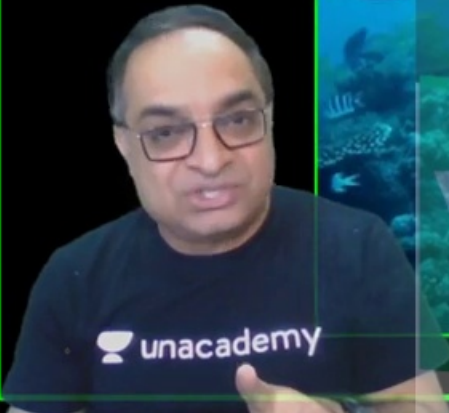
Unit 1

Diversity In The Living World



Unit 1

Diversity In The Living World



✓ Chapter 1	The Living World
✓ Chapter 2	Biological Classification
✓ Chapter 3	Plant Kingdom
Chapter 4	Animal Kingdom



Taxonomical Aids

- Both **laboratory and field studies** are important for identification of various species.
- The information thus gathered about the species need to be stored for future studies.
- The actual specimens are **collected, preserved and stored** for verification if required later on.



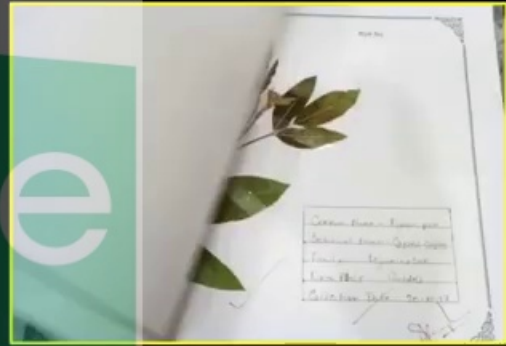
Taxonomical Aids

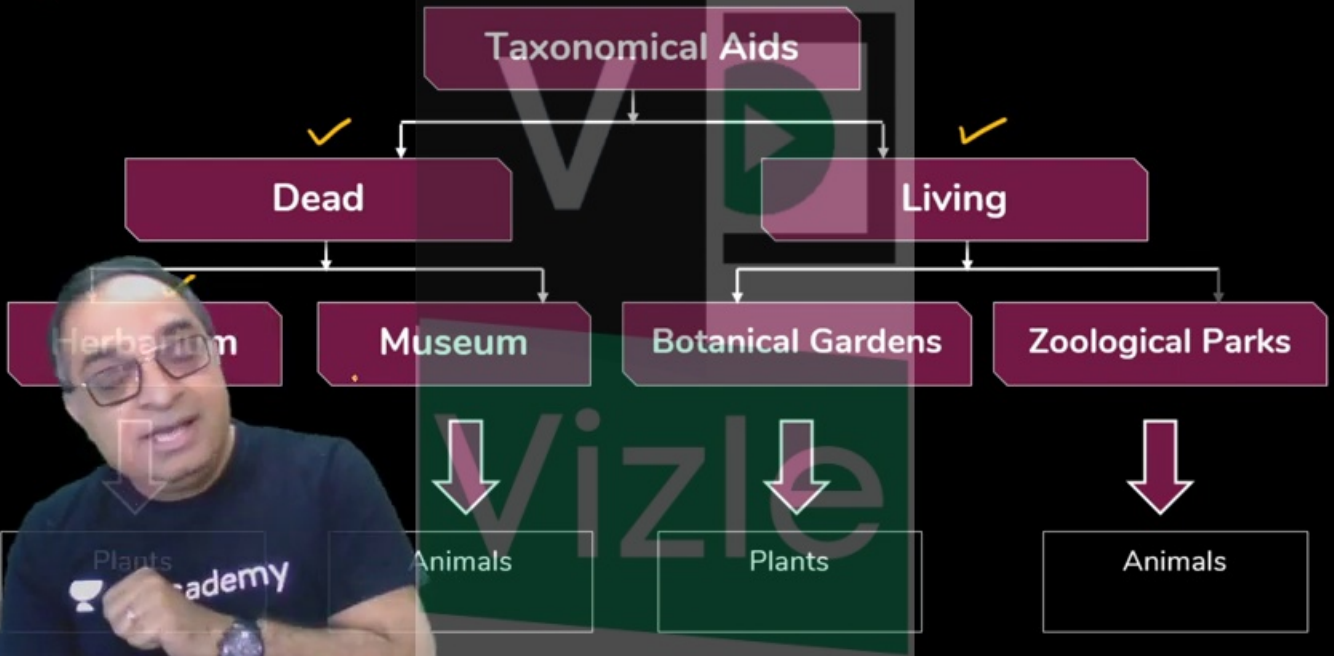
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Taxonomical Aids

→ These are various **techniques, procedures and stored information** that are useful in identification and classification of organisms.





Herbarium

- A herbarium is a place where **dried, pressed and preserved plant specimens** mounted on sheets are kept.
- The sheets are **arranged systematically** in accordance with any **accepted system of classification** (usually Bentham and Hooker's system).



Herbarium

- The storage of sheets forms a repository for future use.
- It provides a **quick referral system** and is quite useful for people involved in taxonomic studies.



History Of Herbaria

- Majority of the world's famous herbaria originated from the botanical gardens.
- The first herbarium was set up at Pisa in Italy.



Equipment

- Digger and pruning knife.
- Sickle with long handle.
- Vasculum.
- Polythene bags.
- Magazines or newspapers.
- Blotting papers.



Vizle

Equipment

- Plant press.
- Field Notebook.
- Herbarium sheets.
- Glue.
- Labels.
- Small transparent polythene bags.



1. Field Visit and Specimen Collection

2. Pressing and Drying

3. Mounting

4. Labelling

5. Preservation



Field Visit and Specimen Collection

- An area is selected for **botanical excursion**.
- It is preferable to visit the **same site in different seasons**.
- For **herbaceous plants**, entire plant is selected and for others shoots having important parts are selected and cut with a pruning knife.



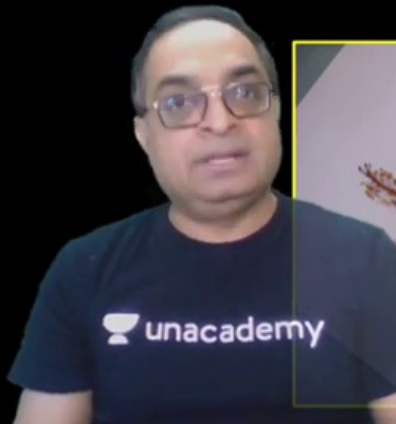
Pressing and Drying ✓

- Specimens are **spread over magazines** or newspaper sheets.
- These newspapers are now **put inside the press**.



Mounting ✓

- Herbarium sheets are **selected**.
- The dried samples are **placed** over the sheets by **glue** and then covered with polythene to prevent damage of delicate parts.



Labelling

→ Family, genus, species, characteristics, area, date and collector name is noted.



Labelling

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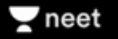
Preservation

- Specimens are treated with 0.1 % mercuric chloride to prevent fungal attack.
- DDT, naphthalene and carbon disulphide are also used as pesticides.





Uses of Herbarium



Information about Flora

Authentic Identification

Quick Referral for Taxonomic Studies

Repository of Plant Specimens

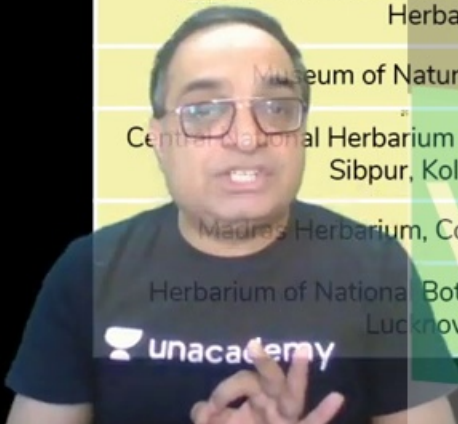
Knowing Ecology of Different Places.



Important Herbaria

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Name	Number of Herbarium Specimens
Royal Botanical Gardens, Kew (London) (Largest Herbarium)	6.5 million
Museum of Natural History (Paris)	Over 6.0 million
Central National Herbarium (Indian Botanical Gardens), Sibpur, Kolkata, India	2.0 million
Madras Herbarium, Coimbatore (MH), India	1,50,000
Herbarium of National Botanical Research Institute, Lucknow, India	80,000



Botanical Gardens

- Botanical gardens are **large sized tracts** where plants of different types and areas are grown for scientific and educational purposes.
- It is considered **natural and economical reference system.**
- The first real botanical garden was developed by **Theophrastus.**



Botanical Gardens

- A botanical garden exclusively growing trees and shrubs is called arboretum.
- The most famous and the **largest botanical garden** is
 - ◆ **Royal Botanical Gardens, Kew (London), England.**
- It is extended in 200 acres of land.
- It was founded in 1759 by William Aiton.



Botanical Gardens

- The largest botanical garden of **India** is
 - ◆ Indian Botanical Garden, Howrah (Sibpur), Kolkata.
- It was established in 1787.
- Besides it, other main botanical gardens are:
 - ◆ National Botanical Research Institute (NBRI), Lucknow.
 - ◆ Lloyd Botanical Gardens, Darjeeling.
 - ◆ Garden of the Indian Agriculture Institute, Dehradun.



Botanical Gardens

→ **Modern day botanical gardens** contain:

- ◆ Outdoor plants ✓
- ◆ Greenhouses ✓
- ◆ Library
- ◆ Research laboratory
- ◆ Herbarium
- ◆ Museum

→ There is an **International Association of Botanical Gardens** (established in 1962) which coordinates research and exchange of plant materials.



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