8 Ans

Aestivation is the term used for the arrangement of calyx (sepals) and corolla (petals) in relation to one another in a flower

Examples of Aestivation

- Valvate aestivation: Hibiscus, Calotropis, mustard and Annona.
- Twisted aestivation: Cotton, ladyfinger, Hibiscus.
- Imbricate aestivation: Legumes, flowers of Gulmohar.
- Vexillary aestivation: Pea plant, flowers of Crotalaria, Dolichos and Tephrosia.
- Quincuncial aestivation: Guava, Delonix, Cassia

11 Ans

Herbarium preparation is a method for preserving plant specimens for scientific study. In summary, the process involves:

Collection: Selecting and collecting plant specimens ensuring to include all representative parts (leaves, flowers, roots, etc.) for accurate identification.

Pressing: Placing the plant material between sheets of newspaper and then pressing it flat under a plant press to remove moisture. This process can take several days to weeks, depending on the thickness and moisture content of the specimen.

Drying: After pressing, specimens are dried completely, often using a plant dryer, to prevent mold growth.

Mounting: The dried plant specimens are then carefully mounted on a standard size herbarium sheet (usually heavyweight paper) using glue or special tape. Relevant data, such as collection location, date, collector's name, and plant identification, are recorded on the sheet.

Labeling: A label with detailed information about the specimen, including scientific name, collection site, date of collection, and collector, is attached to the herbarium sheet.

Storage: The prepared sheets are stored in a herbarium cabinet in a systematic manner to facilitate easy retrieval. The environment is controlled to protect the specimens from pests and degradation.

10 Ans

The International Code of Nomenclature for algae, fungi, and plants (ICN) outlines principles and rules to standardize plant names globally, promoting clarity and stability in the naming of plants. Here's a summary of its core principles and rules:

Principle of Priority: The earliest published name, if it meets certain criteria, is considered the correct name for a species once it has been validly published.

Principle of Typification: Every plant name is associated with a type specimen, which serves as a reference point to define the application of the name of a taxon.

Principle of Binomial Nomenclature: Each species is given a two-part name (binomen), consisting of the genus name followed by the specific epithet, e.g., Homo sapiens.

Rules for Publication: For a plant name to be validly published, it must be published in a recognized scientific work, effectively and validly described (or diagnosed), and given a Latin or latinized description or diagnosis if published after 1935.

Principle of Homotypic and Heterotypic Synonyms: Homotypic (nomenclatural) synonyms arise when a taxon has more than one name based on the same type specimen. Heterotypic (taxonomic) synonyms occur when names refer to different type specimens but are considered to represent the same taxon.

Principle of Conservation and Rejection: In cases where strict application of the rules would lead to confusing changes in well-known names, certain names can be conserved or others rejected to maintain stability and universality.

Principle of No Retroactivity: Changes in nomenclature do not invalidate the original name or its publication date, ensuring historical continuity.

Rule of Priority and Its Exceptions: While priority is a fundamental principle, there are exceptions, such as conserved names, which are exceptions to the rule to preserve usage of widely accepted names

9th Ans

The Arecaceae family, also known as the palm family, is characterized by its monocotyledonous plants, primarily comprising trees but also includes shrubs and climbers. Key features include:

Distribution: Over 2,600 species across tropical to warm temperate regions.

Growth Form: Mostly unbranched trees with a single, columnar stem.

Leaves: Large, either pinnate or palmate, arranged in a spiral.

Flowers: Small, borne in large inflorescences, can be unisexual or bisexual.

Fruits and Seeds: Variety of forms including berries and drupes, usually with one seed.

Economic Importance: Includes crucial crops like coconut, oil palm, and date palm.Root System: Fibrous, without a main tap root.

The Arecaceae are noted for their significant ecological and economic roles,

providing food, oil, and materials, and are popular in landscaping

12th Ans

Cucumber (Cucumis sativus): Widely consumed fresh or pickled, rich in water and nutrients.

Watermelon (Citrullus lanatus): Popular for its sweet, hydrating fruit, rich in vitamins and antioxidants.

Pumpkin/Zucchini (Cucurbita pepo): Versatile in culinary dishes, from sweet to savory, a good source of vitamins and fiber.

Bottle Gourd (Lagenaria siceraria): Fruit used in cooking, hard shell utilized for containers and utensils, with medicinal properties.

Bitter Gourd/Bitter Melon (Momordica charantia): Edible fruit used in various cuisines, known for potential medicinal benefits, including blood sugar regulation.

These examples highlight the diverse economic importance of the Cucurbitaceae family in food, nutrition, and traditional medicine

6th Ans

Homology: Similarity in structure or function due to shared ancestry.

Analogy: Similarity in structure or function due to convergent evolution, rather than shared ancestry.

4th Ans

Valid Publication: The official and recognized introduction of a scientific name for a taxon according to the rules of the relevant nomenclatural code.

Author Citation: The attribution of the author(s) who first validly published a scientific name, typically including the surname(s) of the author(s) and the year of publication.

5th Ans

A cruciform corolla is a flower structure characterized by petals arranged in the shape of a cross when viewed from above

7th Ans

Castor:

Botanical Name: Ricinus communis

Uses: Castor oil for pharmaceuticals and cosmetics; castor seeds in traditional medicine and cuisine.

Sugarcane:

Botanical Name: Saccharum officinarum

Uses: Sugar production for sweetening food and beverages; sugarcane juice and molasses for beverages and culinary applications.

2nd Ans

A botanical garden is a curated collection of living plants, organized for scientific, educational, and aesthetic purposes.

16th Ans

Floras are comprehensive compilations or inventories of plant species found within a specific geographic region, typically focusing on a particular area such as a country, state, or even a smaller locality. These compilations provide detailed information about the taxonomy, distribution, ecology, and sometimes uses of plants within the specified region.

Floras often serve as essential tools for botanists, ecologists, conservationists, educators, and policymakers, offering valuable insights into the plant diversity and ecosystem dynamics of a given area. They play a crucial role in biodiversity conservation efforts by aiding in the identification and documentation of plant species, including rare, threatened, or invasive taxa.

In terms of taxonomic hierarchy, floras organize plant species according to a standardized classification system based on their evolutionary relationships. This hierarchical system, known as taxonomy, classifies organisms into increasingly inclusive categories, from species to higher taxonomic ranks such as genera, families, orders, classes, and kingdoms. Each taxonomic rank represents a level of relatedness among organisms.

The taxonomic hierarchy provides a framework for organizing and categorizing plant diversity, allowing for systematic study, comparison, and communication of biological information. Flora authors follow this hierarchical structure when describing and classifying plant species in their compilations, providing readers with a standardized format for accessing and understanding botanical information.

Overall, floras and taxonomic hierarchy work hand in hand to facilitate the study, documentation, and conservation of plant diversity, offering valuable resources for both professionals and enthusiasts interested in understanding the rich tapestry of plant life on Earth.

15th Ans

Engler and Prantl's system of plant classification, also known as the Englerian system, was a comprehensive attempt to organize the plant kingdom based on evolutionary relationships and morphological characteristics. Developed by German botanists Adolf Engler and Karl Prantl in the late 19th and early 20th centuries, this system represented a significant advancement in plant taxonomy at the time. Here's an overview of its merits and demerits:

Merits:

Hierarchical Organization: Provided a systematic arrangement of plants based on evolutionary relationships.

Emphasis on Morphology: Used morphological traits for easy identification and categorization.

Global Scope: Encompassed the entire plant kingdom, facilitating global botanical studies.

Foundation for Research: Laid groundwork for further botanical research and classification methods.

Demerits:

Subjectivity: Prone to subjective interpretation of morphological features by taxonomists.

Limited by Morphology: Unable to fully reflect true evolutionary relationships, especially with molecular advancements.

Incompleteness: Did not fully incorporate all known plant species and their relationships.

Static Nature: Became outdated and inflexible with new discoveries and changes in understanding.