

1. THE LIVING WORLD

1. Define metabolism. What is the difference between anabolism and catabolism?

A: **Metabolism** is the sum total of all the chemical reactions occurring in the body of an organism.

Anabolism	Catabolism
1) It is a constructive metabolic process. 2) Here, complex molecules are formed from simpler molecules by Photosynthesis .	1) It is a destructive metabolic process. 2) Here, complex molecules are broken down into simpler molecules by respiration .

2. What is growth? What is the difference between the growth in living organisms and growth in non-living objects?

A: 1) Growth is a permanent and irreversible increase in the size & dry weight of a living organism.
2) The growth in living organisms occurs by cell division; where as growth in non-living objects occurs by the accumulation of materials. **Ex:** Mountains, boulders.

3. What is meant by identification and nomenclature of an organism?

A: **Identification:** The determination of a collected organism whether is entirely new or already known, is called Identification.

Nomenclature: Providing a universal scientific name to an identified organism is called Nomenclature.

5. MORPHOLOGY OF FP

4. Differentiate fibrous roots from adventitious roots.

A:	Fibrous roots	Adventitious roots
	1) The roots that originate from the base of stem are called fibrous roots. 2) Ex: Monocots like Maize.	1) The roots which arise from parts of the plant other than the radicle are called adventitious roots. 2) Ex: Velamen, Parasite roots, Ficus

5. Define modification. Mention how root are modified in banyan tree and mangrove plants?

- A:**
- 1) A permanent change in the shape, structure of a plant body in order to perform a new function depending upon environment is called modification.
 - 2) In banyan, pillar like roots arise from the long heavy branches to give additional support to them.
 - 3) In Mangrove plants live Avicennia, Rhizophora the roots come out of the ground and grow vertically upwards. Such roots are called Respiratory roots. Pneumatophores as they help to get oxygen for respiration.

6. How is pinnately compound leaf is different from a palmately compound leaf? Explain with one example each.

A:	Pinnately compound leaf	Palmately compound leaf
	In pinnately compound leaf, the leaflets are arranged on either side of a common axis called rachis. Ex: Murraya, Neem	In palmately compound leaf, the leaflets are arranged at the tip of petiole. Ex: Dolichos, Silk cotton.

7. How the petals in pea plant are arranged? What is such type of arrangement called?

- A:** In pea flowers, there are five petals, the largest (standard) petal overlaps the two lateral petals (wings), which in turn overlap the two smallest anterior keel petals. This type of aestivation is called vexillary or papilionaceous.

8. Differentiate between apocarpous and syncarpous ovary.

A:	Apocarpous Ovary	Syncarpous Ovary
	1) All the carpels of gynoecium present on the thalamus are free from each other 2) Ex: Lotus, Rose.	1) All the carpels of gynoecium present on the thalamus are fused with each other. 2) Ex: Mustard, Tomato.

9. Define schizocarpic dry fruits. Give an example.

A: **Schizocarpic dry fruits:** The dry fruits which split into one seeded (bits) **mericarps** are known as schizocarpic dry fruits. **Ex:** Acacia, Castor, Coriandrum.

6. MODES OF REPRODUCTION

10. Mention the modes of reproduction in Algae and Fungi.

A: 1) In Algae, vegetative reproduction is by fragmentation. **Ex:** Spirogyra.

Asexual reproduction is by motile zoospores.

Sexual reproduction is by syngamy. **Ex:** Cladophora.

2) In fungi, vegetative reproduction is by fragmentation.

Asexual reproduction is by non-motile spore production.

Sexual reproduction is by gametangial copulation. **Ex:** Rhizopus

11. Give reasons as to why cell division can or cannot be a type of reproduction in multicellular organisms.

A: 1) When a unicellular organism undergoes vegetative (or) asexual reproduction, cell division can be a type of reproduction for the production of new organisms.

2) Normally in multicellular organisms cell division is essential for growth and development but not for the generation of new plants.

Hence cell division cannot be a type of reproduction in multicellular organisms.

8. TAXONOMY OF ANGIOSPERMS

12. What is artificial system of plant classification? Give one example.

A: Artificial system of plant classification is a method of classifying plants based on one or a few observable characters, without considering natural relationships.

Ex: Carolus Linnaeus classified plants based on the number of stamens in flowers.

11. CELL CYCLE AND CELL DIVISION

13. Between a prokaryote and a eukaryote, which cell has a shorter cell division time?

A: Between a prokaryote and a eukaryote cell **prokaryotic cell** has a shorter cell division time.

14. Which part of the human body should be used to demonstrate stages in mitosis?

A: The body cells (cells lining the gut and skin) are the parts of human body used to demonstrate the stages of mitosis.

15. What attributes does a chromatid require to be classified as a chromosome?

A: A chromatid is said to be a chromosome when it possesses

- i) Independent existence
- ii) Its own centromere with one DNA molecule.

16. It is said that one cycle of cell division in human cells (eukaryotic cells) take 24 hours. Which phase of the cycle, do you think occupies the maximum part of cell cycle?

A: S-phase or Synthesis phase of interphase

17. It is observed that heart cells do not exhibit cell division. Such cells do not divide further and exit _____ phase to enter an inactive stage called _____ of cell cycle. Fill in the blanks.

A: (1) G_1 phase (2) Quiescent stage (G_0)

18. Mitochondria and plastids have their own DNA (genetic material). What is their fate during nuclear division like mitosis?

A: During cytokinesis, mitochondria and plastids get distributed between the two daughter cells.

19. The following events occur during the various phases of the cell cycle. Fill the blanks with suitable answer against each.

a. Disintegration of nuclear membrane _____ b. Appearance of nucleolus _____

c. Division of centromere _____ d. Replication of DNA _____

A: a) Prophase b) Telophase c) Anaphase d) S-phase

14. ECONOMIC BOTANY

20. Write any two uses of the following plants: a) Cotton b) Neem

A: a) **Cotton:**

- i) Cotton fibres are extensively used in the manufacturing of cloth, textiles, tyre fabrics, various forms of threads, twine etc.,
- ii) Cotton fibres are also used to prepare gun cotton.

b) **Neem:**

- i) Neem plant parts are used in traditional medicine systems like **Ayurveda and Unani**.
- ii) **Neem seed oil** is widely used in cosmetic industries for skin care, hair products, tooth paste and soaps.

21. Write the botanical name of teak plant. Write any two uses of its timber.

A: Botanical name of Teak plant is **Tectona grandis**

Uses of Timber:

- i) Timber is widely used in furniture making like doors, window frames, Cricket bats etc.
- ii) It is used for decking of boats and ships.