



BOTANY

Detailed Chapter-wise Analysis

1. Cell : The Unit of Life

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Golgi body	1	0	0	1	0	1	3	1	1	1
Mitochondria	0	1	0	0	1	0	2	0	0	2
Endoplasmic Reticulum	0	1	0	0	0	0	1	1	0	0
Chromosomes	0	0	1	0	0	0	1	0	0	1
Ribosomes	0	0	0	1	0	1	2	2	0	0
Cell Organelles	0	0	0	0	1	1	2	0	1	1
Plastids	0	0	0	0	1	0	1	1	0	0
Nucleus, Karyotype, Polytene, Lampbrush etc.	0	0	0	0	1	0	1	0	1	0
What is a Cell ? Overview of the Cell	0	0	0	0	0	1	1	1	0	0
Prokaryotic Ribosomes, Inclusion Bodies, Mesosomes, Nucleoid, Cytoplasm Contents etc.	0	0	0	0	0	1	1	1	0	0
Total	1	2	1	3	4	6	17	7	3	5

Summary: The chapter "Cell: The Unit of Life" accounted for **17 questions** over the years. This chapter covers various eukaryotic and prokaryotic cell components, with a noticeable number of **Hard questions (5 questions)**, particularly concerning mitochondria, chromosomes, and cell organelles.

Insights:

- **Eukaryotic cell organelles** like Golgi body, Mitochondria, Ribosomes, and the general concept of Cell Organelles are **frequently questioned**.
- There's a good mix of difficulty, but some topics like **Mitochondria and Chromosomes tend to be Hard**.



2. Cell Cycle and Cell Division

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
G1 Phase	2	1	0	0	0	0	3	1	1	1
Meiosis I	1	1	2	1	2	0	7	4	3	1
Meiosis II	0	1	0	2	0	0	3	1	2	0
Mitosis	0	1	2	0	1	1	5	2	3	0
S Phase	0	1	0	2	0	0	3	1	1	0
G2 Phase	0	0	0	1	0	0	1	0	0	1
Interphase	0	0	0	0	1	0	1	0	1	0
Total	3	5	5	6	4	2	25	9	9	3

Summary: This chapter is **highly significant, with 25 questions in total**. Questions were well-distributed across Easy (9), Medium (9), and Hard (3) difficulties. Both Mitosis and Meiosis, along with the phases of the cell cycle (G1, S, G2, Interphase), are regularly tested.

Insights:

- **Meiosis I is a particularly important topic**, consistently appearing and having a mix of Easy and Medium/Hard questions.
- Understanding the different phases of **Interphase (G1, S, G2) and Mitosis** is crucial, as they appear frequently.



3. The Living World

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Species/Genus/Family/Order/Class/Phylum or Division/Kingdom	0	0	1	0	0	0	1	0	1	0
Total	0	0	1	0	0	0	1	0	1	0

Summary: This chapter had only **1 question in 2022**, focusing on Taxonomic Hierarchy.

Insights:

- While infrequent, the **Taxonomic Hierarchy is a basic concept** that might be tested.



4. Biological Classification

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
History, Structure, Biochemical Composition and Examples (Viruses and other Acellular organisms.)	1	0	0	0	0	0	1	0	1	0
General Characters (Fungi)/Mycorrhiza	0	1	0	0	2	0	3	2	1	0
Ascomycetes	0	0	1	0	0	0	1	1	0	0
Mycoplasma	0	0	1	0	0	0	1	0	1	0
Characteristics	0	0	1	0	0	0	1	0	1	0
Five Kingdom	0	0	0	0	0	1	1	0	0	1
Total	1	1	3	0	2	1	8	3	4	1

Summary: This chapter provided **8 questions** over the years. Key areas included fungal characteristics and classification and features of Monera (Mycoplasma, Characteristics). Difficulty was balanced between Easy and Medium.

Insights:

- **Kingdom Fungi has been a recurrent topic.**
- Understanding the characteristics of **Kingdom Monera, particularly Mycoplasma, is important.**



5. Plant Kingdom

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Rhodophyceae	1	1	1	0	0	0	3	3	0	0
Chlorophyceae	1	1	1	0	0	0	3	2	1	0
Characteristics and Importance	1	1	0	1	0	1	4	3	0	1
Liverworts	0	1	0	0	0	0	1	1	0	0
Phaeophyceae	0	1	1	0	1	0	3	0	1	2
Mosses	0	0	0	1	0	0	1	0	0	1
General Characteristics and Importance	0	0	0	1	0	1	2	1	1	0
Introduction, Characteristics	0	0	0	0	0	2	2	1	0	1
Total	3	5	4	3	1	4	20	11	2	5

Summary: This chapter is significant, contributing **20 questions**. It extensively covers different plant groups: Algae (Rhodophyceae, Chlorophyceae, Phaeophyceae), Bryophytes (Liverworts, Mosses), Pteridophytes, and Gymnosperms. Difficulty is varied, with 11 Easy, 2 Medium, and 5 Hard questions.

Insights:

- **Algae (Rhodophyceae, Chlorophyceae, Phaeophyceae) are a consistent topic.**
- **Pteridophytes and Bryophytes characteristics** are also important.
- **Gymnosperms and Angiosperms general characteristics** have started to appear in later years.
- Expect questions covering **plant life cycles with some Hard difficulty**.



6. Morphology of Flowering Plants

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Types	1	0	0	0	0	0	1	1	0	0
Gynoecium (Carpels)	2	0	0	0	0	0	2	2	0	0
Androecium (Stamens)	0	1	0	0	1	0	2	1	1	0
Brassicaceae	0	1	0	0	0	0	1	0	0	1
Poaceae	0	1	0	0	0	0	1	0	1	0
Symmetry	0	0	1	0	1	0	2	1	1	0
Modifications	0	0	1	0	0	0	1	0	1	0
Aestivation	0	0	1	0	0	0	1	1	0	0
Solanaceae	0	0	0	1	0	0	1	0	1	0
Placentation	0	0	0	1	0	0	1	1	0	0
Solitary Flowers	0	0	0	1	0	0	1	0	0	1
Structure of Monocotyledonous Seed	0	0	0	0	1	1	2	1	1	0
Terminology/Symmetry/Thalamus/Position of Floral Parts on Thalamus/Functions of Flower	0	0	0	0	1	1	2	1	1	0
Types of Fruits	0	0	0	0	1	0	1	0	0	1
Floral Formula	0	0	0	0	0	1	1	0	0	1
Total	3	3	3	3	5	4	21	8	6	4

Summary: This chapter provided **21 questions**. Questions covered various parts of flowering plants, including roots, flowers (parts, symmetry, aestivation, placentation, formula), inflorescence, fruits, and seeds. There was a good mix of Easy, Medium, and Hard questions.

Insights:

- **Detailed knowledge of floral parts**, their arrangements (**symmetry, aestivation, placentation**), and **terminology** is crucial.
- Questions on **plant families (Brassicaceae, Poaceae, Solanaceae)** and **types of fruits/seeds** are also present.
- Expect detailed questions, including Hard ones, on **floral formula**.



7. Anatomy of Flowering Plants

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Vascular Cambium	1	1	1	0	0	0	3	0	3	0
Anatomy of Monocotyledonous Stem	1	0	0	0	0	1	2	0	2	0
Complex Tissues	0	1	0	0	0	0	1	0	1	0
Epidermal Tissue System	0	1	0	0	1	0	2	0	2	0
Anatomy of Monocotyledonous Root	0	0	1	0	0	0	1	0	1	0
Vascular Tissue System	0	0	1	1	0	0	2	1	1	0
Cork Cambium	0	0	0	1	0	0	1	0	1	0
Anatomy of Monocotyledonous (Isobilateral) Leaf	0	0	0	0	1	0	1	1	0	0
Simple Tissue	0	0	0	0	1	0	1	0	1	0
Total	2	4	4	3	3	1	17	2	12	3

Summary: The "Anatomy of Flowering Plants" chapter saw a **consistent presence in NEET exams, with 17 questions** asked across the six years. Questions were predominantly of **Medium difficulty (12 questions)**, with some Easy (2 questions) and Hard (3 questions) questions.

Insights:

- "**Vascular Cambium**" is a **frequently tested topic**, appearing multiple times with Medium and Hard difficulty respectively.
- Topics related to **Monocotyledonous plant anatomy, including Stem, Root, and Leaf structures**, have also been consistently questioned.
- Understanding different **Tissue Systems (Epidermal and Vascular)** is important.



8. Plant Growth and Development

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Growth Phases of Growth	1	0	0	0	0	0	1	1	0	0
Gibberellins	1	0	0	1	1	0	3	3	0	0
Abscisic Acid	1	0	0	0	0	0	1	0	1	0
Plasticity	0	1	1	0	0	0	2	2	0	0
Introduction	0	1	0	0	0	0	1	0	0	1
Auxins	0	1	0	0	1	1	3	2	0	1
Ethylene	0	0	2	1	0	0	3	2	1	0
Differentiation, Dedifferentiation and Redifferentiation	0	0	0	1	1	0	2	2	0	0
Effects of PGR	0	0	0	0	0	1	1	1	0	0
Total	3	4	3	3	3	2	18	12	2	2

Summary: This chapter had **18 questions**. Questions were primarily focused on **Plant Growth Regulators (PGRs)** like Gibberellins, Abscisic Acid, Auxins, and Ethylene, as well as processes like differentiation and photoperiodism. Most questions were Easy (12), with some Medium (2) and Hard (2) ones.

Insights:

- Knowledge of **Plant Growth Regulators (PGRs)** and their physiological effects is consistently tested. Gibberellins and Auxins specifically appear multiple times with Easy difficulty.
- Concepts like **Developmental Plasticity and Differentiation** are also important.



9. Photosynthesis in Higher Plants

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Photorespiration	1	0	0	0	1	0	2	1	1	0
What is Light Reaction?	1	1	0	1	0	0	3	2	1	0
Hatch and Slack Pathway	0	1	1	0	0	0	2	1	1	0
Chemiosmotic Hypothesis	0	0	1	1	0	0	2	0	2	0
Calvin Cycle or C3 Cycle/Primary Acceptor of CO ₂ /Stages of Calvin Cycle	0	0	0	1	2	2	5	1	2	2
Chlorophyll 'a', Chlorophyll 'b' and 'c', Xanthophylls, Carotenoids, Absorption and Action Spectrum	0	0	0	0	0	1	1	0	1	0
Total	2	2	2	3	3	3	15	5	8	2

Summary: This chapter had **15 questions**, consistently appearing each year. It covers crucial aspects of photosynthesis, including light reaction, C4 pathway, chemiosmotic hypothesis, and the Calvin cycle. Difficulty is mostly Easy (5) and Medium (8), with a couple of Hard questions (2).

Insights:

- **Calvin Cycle (C3 Cycle) and associated concepts** (primary CO₂ acceptor, stages) are **very important** and have appeared with increasing frequency and varied difficulty.
- Understanding the **Light Reaction and the Chemiosmotic Hypothesis** is also essential.
- The **C4 pathway (Hatch and Slack Pathway)** is a recurring topic.



10. Respiration in Plants

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
TCA Cycle	1	0	0	0	1	0	2	1	1	0
Electron Transport Chain	0	1	0	0	1	1	3	1	2	0
Alcoholic and Lactic Acid Fermentation	0	0	1	0	0	0	1	1	0	0
Formation of Pyruvic Acid	0	0	1	2	0	0	3	1	0	2
Total	1	1	2	2	2	1	9	4	3	2

Summary: "Respiration in Plants" provided **9 questions**. This chapter focuses on aerobic respiration (TCA cycle, Electron Transport Chain) and fermentation. Questions are distributed across Easy, Medium, and Hard difficulties.

Insights:

- Key pathways like **TCA Cycle, Electron Transport Chain, and Glycolysis (Formation of Pyruvic Acid)** are frequently examined.
- The **Formation of Pyruvic Acid** has appeared with **Hard difficulty** in recent years.



11. Sexual Reproduction in Flowering Plants

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Microsporogenesis, T.S. of Anther, Pollen Grain, Pollen Viability, Pollen Bank	1	0	0	0	0	0	1	0	1	0
Pollination/Agents of Pollination/Outbreeding Devices/Emasculation	1	1	3	2	2	1	10	4	4	2
Structure and Development of Ovule and Female Gametophyte	1	0	0	0	0	2	3	1	2	0
Double Fertilisation	0	1	0	1	0	0	2	1	1	0
Types of Fruits on the Basis of Development, Epicarp, Mesocarp, Endocarp and Endosperm	0	0	1	0	0	0	1	1	0	0
Structure and Development of Anther and Male Gametophyte	0	0	0	0	0	1	1	0	0	1
Formation of Seed, Classification of Seed	0	0	0	0	0	1	1	0	0	1
Total	3	2	4	3	2	6	20	7	8	5

Summary: This chapter is another **consistently high-contributing area, with 20 questions**. It covers the entire reproductive process in flowering plants, from gametophyte development to pollination, fertilization, and fruit/seed formation. Difficulty is balanced, with 7 Easy, 8 Medium, and 5 Hard questions.

Insights:

- **Pollination (Types, Agents, Outbreeding Devices)** is the most frequently tested topic, appearing every year and accounting for 10 questions, spanning Easy, Medium, and Hard difficulties.
- **Structure and Development of Anther/Male Gametophyte and Ovule/Female Gametophyte** are also important, often appearing with Medium to Hard difficulty.
- Concepts like **Double Fertilisation and Seed/Fruit Formation** are crucial for a complete understanding.

12. Molecular Basis of Inheritance

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Process of Translation	1	0	1	0	0	0	2	2	0	0
Initiation, Elongation and Termination Process, Enzymes Involved in that	1	1	0	0	1	1	4	3	0	1
Nucleotide	1	0	0	0	0	0	1	0	1	0
Nitrogen Base	1	0	0	0	0	0	1	0	1	0
Salient Features of Genetic Code	1	1	0	0	0	0	2	0	2	0
Mutations and the Genetic Code	0	1	0	0	0	0	1	1	0	0
Derivation of DNA Structure and Central Dogma	0	1	0	0	0	0	1	0	1	0
Post Transcriptional Process	0	1	0	0	0	1	2	0	1	1
DNA Fingerprinting	0	1	1	0	0	0	2	2	0	0
RNA Polymerases	0	1	0	1	0	0	2	2	0	0
Chargaff's Rule	0	1	0	0	0	0	1	0	1	0
RNA World	0	1	0	1	0	1	3	1	2	0
Nucleosome, Histone Proteins etc.	0	1	1	1	0	1	4	1	3	0
Hershey-Chase Experiment	0	0	1	0	0	1	2	0	2	0
Methodologies/Salient Features of Human Genome	0	0	1	1	0	1	3	3	0	0
Properties of Genetic Material (DNA Versus RNA)	0	0	0	1	0	0	1	1	0	0
Lac-Operon	0	0	0	1	1	0	2	1	0	1
Transcription Unit	0	0	0	0	1	0	1	0	1	0
The Experimental Proof	0	0	0	0	1	0	1	0	0	1
The Machinery and Enzymes for DNA Replication, Mechanism of DNA Replication	0	0	0	0	1	0	1	1	0	0
Process of Transcription	0	0	0	1	1	0	2	0	2	0



Genetic Code/tRNA - The Adapter Molecule	0	0	0	0	0	1	1	1	0	0
Total	5	10	6	8	6	7	43	20	17	6

Summary: This is a **high-yield chapter, with a total of 43 questions** over the six years. Questions cover a wide range of topics, including DNA structure, replication, transcription, translation, genetic code, and regulation. The difficulty is diverse, with 20 Easy, 17 Medium, and 6 Hard questions.

Insights:

- **Replication, Transcription, and Translation are fundamental and frequently tested processes**, appearing in multiple years with varying topics and difficulties.
- **Genetic Code, Packaging of DNA Helix, and the Human Genome Project** are also consistently important areas.
- Topics like **Lac-Operon and Experimental Proofs (Hershey-Chase, Replication)** are periodically asked and can be Hard.

13. Principles of Inheritance and Variation

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Co-Dominance	1	0	0	0	1	0	2	0	1	1
Haemophilia	1	0	0	0	0	0	1	0	1	0
Selection of Pea Plant	1	0	1	0	0	0	2	1	1	0
Chromosomal Theory of Inheritance and its Verification	1	0	0	0	0	0	1	1	0	0
Punnett Square	0	1	0	0	0	0	1	1	0	0
Sickle-cell Anaemia	0	1	0	0	0	0	1	0	1	0
Sex Determination in Other Organisms	0	0	1	0	0	0	1	1	0	0
Autosomal Recessive, Autosomal Dominant Disorders	0	0	1	0	0	0	1	1	0	0
Dihybrid Cross, Law of Independent Assortment, Back Cross, Reciprocal Cross	0	0	1	0	0	1	2	0	1	1
Linkage and Recombination, Recombination Map, Three Point Cross	0	0	1	1	0	0	2	1	1	0
Colour Blindness	0	0	1	0	0	0	1	0	1	0
Pleiotropy	0	0	0	1	0	0	1	1	0	0
Klinefelter's Syndrome	0	0	0	1	1	0	2	0	2	0
Down's Syndrome	0	0	0	1	0	0	1	1	0	0

Pedigree Analysis	0	0	0	1	0	1	2	0	1	1
Test Cross	0	0	0	0	1	0	1	0	1	0
Incomplete Dominance	0	0	0	0	1	0	1	0	0	1
Concept of Factors, Law of Dominance, Monohybrid Cross, Punnett Square, Test Cross, Law of Segregation	0	0	0	0	1	0	1	0	0	1
Law of Dominance	0	0	0	0	1	0	1	0	0	1
Polygenic Inheritance	0	0	0	0	0	1	1	0	1	0
Total	4	2	6	6	6	3	27	8	11	8

Summary: This is another **critical chapter, yielding 27 questions** across the years. It covers Mendelian principles, exceptions, genetic disorders (Mendelian and Chromosomal), sex determination, linkage, and pedigree analysis. Difficulty is diverse with 8 Easy, 11 Medium, and 8 Hard questions.

Insights:

- **Genetic Disorders** (Mendelian like Haemophilia, Sickle-cell Anaemia, Colour Blindness, Autosomal Recessive/Dominant, and Chromosomal like Klinefelter's, Down's Syndrome) are **frequently tested and can be challenging**.
- **Mendel's Laws, Inheritance of One/Two Genes, and Exceptions to Mendelian Principles** (Co-Dominance, Incomplete Dominance) are **fundamental and regularly questioned**.
- **Linkage and Recombination and Pedigree Analysis** are **important advanced topics**, often with Medium to Hard difficulty.

14. Microbes in Human Welfare

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Primary Treatment	1	0	0	0	0	0	1	1	0	0
Bioactive Molecules	1	0	1	0	0	0	2	1	0	1
Chemicals	0	1	0	0	0	0	1	0	0	1
Enzymes	0	0	0	0	1	1	2	1	1	0
Fermented Beverages	0	0	0	0	0	1	1	1	0	0
Microbes as Biofertilizers	0	0	0	0	0	1	1	0	1	0
Microbes in Household Products	0	0	0	0	0	1	1	0	1	0
Total	2	1	1	0	1	4	9	4	3	2

Summary: "Microbes in Human Welfare" had **9 questions** over the years. The questions covered various applications of microbes, including sewage treatment, industrial products (bioactive molecules, chemicals, enzymes, fermented beverages), and biofertilizers.

Insights:

- Questions are spread across different applications, indicating that a **broad understanding of microbial roles in industry and environment is necessary**.
- Topics like **Bioactive Molecules and Industrial Enzymes/Fermentation are recurring**.



15. Organisms and Populations

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Natality, Mortality, Immigration and Emigration	1	0	0	0	0	0	1	0	1	0
Types of Population Interactions	0	2	2	2	1	1	8	4	3	1
Growth Models : Exponential and Logistic Growth	0	1	0	0	1	1	3	3	0	0
Population Attributes	0	0	0	1	0	0	1	0	0	1
Total	1	4	2	3	2	3	15	7	4	3

Summary: This chapter accounted for **15 questions**. **Population Interactions** are the most frequently asked topic, consistently appearing each year. Questions were primarily Easy (7) and Medium (4), with some Hard ones (3).

Insights:

- **Types of Population Interactions** (e.g., predation, competition, mutualism) is a **must-know topic** due to its high frequency.
- Understanding **Population Growth Models (Exponential and Logistic)** and **Population Attributes** is also important.



16. Ecosystem

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Food Chain	1	0	0	0	0	1	2	0	1	1
GPP	1	0	0	0	0	0	1	0	1	0
Pyramid of Biomass	0	1	0	0	0	0	1	0	1	0
NPP	0	1	0	1	1	1	4	2	0	2
Process Involved in Decomposition	0	0	2	1	0	0	3	1	2	0
Primary Productivity	0	0	0	0	0	1	1	0	0	1
Introduction	0	0	0	0	0	1	1	0	1	0
Total	2	3	2	2	1	5	15	4	6	4

Summary: The "Ecosystem" chapter generated **15 questions**. Topics ranged from energy flow (Food Chain) to productivity (GPP, NPP, Primary Productivity) and ecological processes (Decomposition). Difficulty was spread across Easy (4), Medium (6), and Hard (4).

Insights:

- **Productivity (NPP, GPP, Primary Productivity) is a recurring and important topic**, often with varied difficulty.
- **Decomposition processes and Food Chains** also appear consistently.

17. Biodiversity and Conservation

Topic	2020	2021	2022	2023	2024	2025	Total Questions	Easy	Medium	Hard
Introduction	1	0	0	0	0	0	1	1	0	0
Patterns of Biodiversity	1	0	0	0	0	0	1	1	0	0
Botanical Gardens, Zoological Parks and Wildlife Safari Parks	0	0	1	0	1	2	4	3	1	0
IUCN Red List, the Evil Quartet, Over-Exploitation, Alien Species Invasions and Co-Extinctions	0	0	1	1	2	0	4	4	0	0
Hot Spots, Major Hotspots in India, Sacred Groves	0	0	1	0	0	0	1	1	0	0
Earth Summit	0	0	0	1	0	0	1	1	0	0
Latitudinal Gradients	0	0	0	0	1	0	1	0	0	1
Productivity Stability Hypothesis, Rivet Popper Hypothesis	0	0	0	0	1	0	1	0	1	0
Total	2	0	3	2	5	2	14	11	2	1

Summary: The "Biodiversity and Conservation" chapter contributed **14 questions**, mainly focusing on Easy difficulty levels (11 questions). **Ex-situ and In-situ conservation methods**, along with the causes and patterns of biodiversity loss, are recurring themes.

Insights:

- **Conservation strategies (Ex-Situ and In-Situ) and Loss of Biodiversity are consistently asked topics.**
- Questions tend to be relatively straightforward (**Easy difficulty**), suggesting an emphasis on foundational knowledge.