

SAMPLE CONTENT

Absolute

BIOLOGY Vol - I

NEET-UG

3687 MCQs with Hints

For all Medical Entrance Examinations held across India.



Now with more
study techniques

Classification:

Kingdom : Animalia
Phylum : Chordata
Class : Mammalia
Genus : *Panthera*
Species : *pardus*



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Target Publications® Pvt. Ltd.

For all Medical Entrance Examinations held across India.

Absolute NEET – UG Biology Vol. I

Now with
more study
techniques

Salient Features

- Exhaustive theory for every topic.
- Exhaustive subtopic wise coverage of MCQs.
- '3687' MCQs including questions from previous NEET examinations.
- Includes solved MCQs upto NEET Phase-I and Phase-II 2020.
- Various competitive exam questions are exclusively covered.
- Neat and labelled authentic diagrams.
- Multiple study techniques to enhance understanding and problem solving.
- Hints are provided wherever deemed necessary.
- Quick Review to build concepts.
- Video links provided via Q.R. codes for boosting conceptual retention.
- Topic test provided at the end of each chapter.

Scan the adjacent Q.R. Code to access solutions/hints to Topic Test.
(tp2012)



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PREFACE

Target's "Absolute Biology Vol – I" is a complete guidebook, extremely handy for the preparation of various competitive examinations like NEET (UG). This edition provides an unmatched comprehensive amalgamation of theory with MCQs. The chapters are compiled according to the notified syllabus for NEET-UG. The content of this book is framed after reviewing the format of NCERT textbook. The book provides the students with scientifically accurate context, several study techniques and relevant supporting details essential for a better understanding of biology.

The sections of **Theory**, **Quick Review**, **MCQs** and **Topic Test** form the backbone of every chapter and ensure adequate revision.

In this book the Theoretical Concepts are presented elaborately along with diagrams that enable better preparation of the basics of topics for any competitive examination.

The Multiple Choice Questions in each chapter are a mix of questions based on higher order thinking, theory and multiple concepts. The level of difficulty of these questions is at par with that of various competitive examinations like CBSE, AIIMS, CPMT, AFMC, JIPMER, TS EAMCET (Med. and Engg.), BCECE, AP EAMCET (Med. and Engg.) and likes. Also to keep students updated, questions from most recent examinations of NEET 2020 are covered exclusively.

Topic Test has been provided at the end of each chapter to assess the level of preparation of the student on a competitive level.

All the features of this book pave the path of a student to excel in their examinations. The features are designed keeping the following elements in mind: Time management, easy memorization or revision and non-conventional yet simple methods for MCQ solving.

We are confident that this book will cater to needs of students across a varied background and effectively assist them to achieve their goal.

We hope the book benefits the learner as we have envisioned.

A book affects eternity; one can never tell where its influence stops.

- Publisher

Edition: Fifth

The journey to create a complete book is strewn with triumphs, failures and near misses. If you think we've nearly missed something or want to applaud us for our triumphs, we'd love to hear from you.

Please write to us on: mail@targetpublications.org

Disclaimer

This reference book is based on the NEET-UG syllabus prescribed by National Testing Agency (NTA). We the publishers are making this reference book which constitutes as fair use of textual contents which are transformed by adding and elaborating, with a view to simplify the same to enable the students to understand, memorize and reproduce the same in examinations.

This work is purely inspired upon the course work as prescribed by the National Council of Educational Research and Training (NCERT). Every care has been taken in the publication of this reference book by the Authors while creating the contents. The Authors and the Publishers shall not be responsible for any loss or damages caused to any person on account of errors or omissions which might have crept in or disagreement of any third party on the point of view expressed in the reference book.

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KEY FEATURES

Glossary



'**Glossary**' provides the simplified explanations of certain difficult words encountered in the chapter.



Smart tip - 1

'**Smart tip**' can be used to memorise or revise the key points and formulae at a glance.

Glossary

Smart tip

Caution



'**Caution**' helps students to clarify the difference between two related words or homophones.

Caution



Smart Code

'**Smart Code**' provides simplified mnemonics for important or difficult concepts.

Smart Code

QR code

'**QR code**' provides:

- Access to a video/PDF in order to boost understanding of a concept or activity
- Hints to Topic Test of each chapter.

Q.R. Code



Scientists and their contribution

'**Scientists and their contributions**' provide a list of renowned scientists studied throughout the chapter and their discoveries/ inventions

Scientists and their contributions

Clock Symbol



'**Clock Symbol**' instructs students that the given MCQ can be solved apart by applying either smart tips, smart codes or thinking hatke.

Clock Symbol



Connection

'**Connection**' enables students to interlink concepts covered in different chapters.

Connection

Thinking Hatke



'**Thinking Hatke**' section provides the students with tricks to arrive at the correct answer in a more non-conventional yet simple way.

Thinking Hatke



Quick Review

'**Quick Review**' includes tables/ flow charts to summarize the key points in chapter.

Quick Review

Gyan Guru

'**Gyan Guru**' illustrates real life applications or examples related to the concept discussed.

Gyan Guru



Knowledge Badhao!

'**Knowledge Badhao**' provides students with additional information relevant to the concept.

Knowledge Badhao

Frequently Asked Questions

➤ **Why Absolute Series?**

Gradually, every year the nature of competitive entrance exams is inching towards conceptual understanding of topics. Moreover, it is time to bid adieu to the stereotypical approach of solving a problem using a single conventional method.

To be able to successfully crack the NEET (UG) examinations, it is imperative to develop skills such as data interpretation, appropriate time management, knowing various methods to solve a problem, etc. With Absolute Series, we are sure, you'd develop all the aforementioned skills and take a more holistic approach towards problem solving. The way you'd tackle advanced level MCQs with the help of Hints, Smart tips, Smart codes and Thinking Hatke would give you the necessary practice that would be a game changer in your preparation for the competitive entrance examinations.

➤ **What is the intention behind the launch of Absolute Series?**

The sole objective behind the introduction of Absolute Series is to cater to needs of students across a varied background and effectively assist them to successfully crack the NEET (UG) examinations. With a healthy mix of MCQs, we intend to develop a student's MCQ solving skills within a stipulated time period.

➤ **What do I gain out of Absolute Series?**

After using Absolute Series, students would be able to:

- assimilate the given data and apply relevant concepts with utmost ease.
- tackle MCQs of different pattern such as match the columns, diagram based questions, multiple concepts and assertion-reason efficiently.
- garner the much needed confidence to appear for competitive exams.
- apply easy and time saving methods to tackle tricky questions which will help ensure that time consuming questions do not occupy more time than you can allot per question.

➤ **How to derive the best advantage of the book?**

To get the maximum benefit of the book, we recommend :

- Go through the detailed theory at the beginning of a chapter for concept clarity. Commit Smart Tips and Smart Codes into memory and pay attention to Caution.
- Using subtopic wise segregation as a leverage, complete MCQs in each subtopic at your own pace. Questions from exams such as NEET-UG are tagged and placed along the flow of subtopic. Mark these questions specially to gauge the trends of questions in various exams.
- Be extra receptive to Thinking Hatke and application of Smart Tips and Smart Codes. Assimilate them into your thinking.

Best of luck to all the aspirants!

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Note:



symbol along with the question indicates there exists either an unconventional way or use of either Smart tip / Thinking hatke / Smart Code / any other short ways of solving that MCQ.



symbol after a word in theory indicates that the meaning of the word is provided in the glossary section.

Sample Content

1

The Living World

1.1 What is Living?

1.2 Diversity in the Living World

1.3 Taxonomic Categories

1.4 Taxonomical Aids

1.1 WHAT IS 'LIVING'?

Living organisms have features like growth, reproduction, ability to sense environment and mount a suitable response, metabolism, ability to self-replicate, self-organize, interact and emerge.

Characteristics of Living Organisms:

➤ Growth:

i. Living Organisms:

- All living organisms grow.
- Growth is from inside.
- Two characteristics of growth are increase in mass and number of individuals.
- A multicellular organism grows by cell division. Growth by cell division occurs continuously throughout their life span in plants and in animals it occurs up to certain age.
- Cell division also occurs in unicellular organisms.
- Increase in body mass is considered as growth.

ii. Non-living objects:

- If increase in body mass is considered as growth, non-living objects do not grow.
- It is exhibited by accumulation of material on the surface.
- Mountains, boulders and sand mounds do not grow.

➤ Reproduction:

- A process by which a multicellular organism produces a progeny that possesses features similar to parents is called reproduction (Sexual Reproduction).
- Fungi reproduce asexually by spreading their asexual spores.
- Yeast and *Hydra* reproduce by budding.
- True regeneration is observed in *Planaria*. Their fragmented organism regenerates the lost part of the body and becomes a new organism.
- Fungi, filamentous algae, the protonema of mosses multiply by fragmentation.
- Reproduction is synonymous with growth i.e. increase in number of cells in unicellular organisms like bacteria, algae, *Amoeba*.
- Mules, sterile worker bees, infertile human couples, etc. cannot reproduce.
- A non-living object is incapable of reproducing or replicating by itself.

➤ Metabolism:

- All living organisms are made up of chemicals.
- Chemicals belong to various classes and sizes etc. are constantly being made and changed into some other biomolecule. These conversions are called chemical or metabolic reactions.
- All plants, animals, fungi and microbes exhibit metabolism.
- A non-living object does not exhibit metabolism.
- Metabolic reactions carried out *in vitro* are living reactions.

➤ Cellular Organization:

Metabolism occurs inside the cells. All living organisms have some or the other cell organelles like nucleus, protoplasm, mesosome, capsule, etc., that make up the cell.

➤ Consciousness:

- It is the most complicated feature of all living organisms.
- With the help of sense organs humans sense the environment. Human being is the only organism who has self-consciousness.
- Plants respond to external factors like light, water, temperature, other organisms and pollutants, etc.



- iv. From prokaryotes to eukaryotes all respond to environmental stimuli.
- v. Photoperiod affects reproduction in seasonal breeders - plants as well as in animals.



CAUTION

Consciousness is the state of being aware and responsive to one's own surroundings. All living organisms exhibit consciousness.

Self-consciousness is the state of being aware of not only the surroundings, but also of themselves, their activities, their bodies and mental lives. Only human beings exhibit self-consciousness.



Smart tip - 1

Characteristics of life can be categorized into two:

- i. **Defining properties:** Metabolism, cellular organization, consciousness
- ii. **Non-defining properties:** Reproduction, growth

1.2 DIVERSITY IN THE LIVING WORLD

- **Biodiversity:**
 - i. Biodiversity encompasses all forms of life with variety and variability amongst them.
 - ii. The number of species that are known and described range between 1.7 – 1.8 million.
- **Identification:**

Identification is finding the correct name and place of an organism in a system of classification with the help of identification key.

It also includes comparing an organism with similarities and dissimilarities of already known organism.
- **Nomenclature:**
 - i. The need to standardise the naming of living organisms is to make it unique.
 - ii. Nomenclature provides a distinct and proper name to an organism. Thus, it becomes easy to recognize and differentiate a particular organism from others.
 - iii. Scientific names are based on certain principles evolved by taxonomists[®]:
 - a. For plants, provided by International Code for Botanical Nomenclature (ICBN).
 - b. For animals, provided by International Code for Zoological Nomenclature (ICZN).
 - iv. Scientific names ensure that each organism has only one name and that name is not used for any other organism.

Binomial Nomenclature:

- a. It is the system of providing a name with two components, viz. the **generic name** and the **specific epithet**[®]. For e.g. Man: *Homo sapiens*

This naming system was given by Carolus Linnaeus.

b. **Universal rules of binomial nomenclature are as follows:**

- 1. Biological names are generally in Latin and written in italics (when printed) or underlined (when handwritten).
 - 2. The first word is the genus name and the second word is the specific epithet.
 - 3. The genus name starts with a capital letter and the specific epithet is written in small letters.
 - 4. Also, the author's name appears after the specific epithet.
- For e.g. *Mangifera indica* Linn. (Linn indicates that this species was first described by Linnaeus)

➤ **Classification:**

It is the process by which organism is grouped into convenient categories based on some characters.

Two branches of classification: **Taxonomy and Systematics.**

i. **Taxonomy:**

- a. It is the process of classification of all living organisms into different taxa based on their characteristics.
- b. Organisms are grouped into convenient categories based on some easily observable characteristics. The scientific term for these categories is **taxa**.
- c. External and internal structure, along with the structure of cell, development process and ecological information of organisms are essential and form the basis of modern taxonomic studies.
- d. Characterisation, identification, classification and nomenclature are the processes that are basic to taxonomy.

**ii. Systematics:**

- It is the study of relationships among different kinds of organisms and their diversities.
- Linnaeus used *Systema Naturae* as the title of his publication. The word *Systema* is derived from Latin which means systematic arrangement of organism.
- Systematics includes identification, nomenclature and classification. It also accounts evolutionary relationships between organisms.

1.3 TAXONOMIC CATEGORIES

- Classification involves hierarchy of steps where each step represents a rank or a category.
- Taxonomic Category:** Overall taxonomic arrangement.
- Taxonomic Hierarchy:** All categories together constitute taxonomic hierarchy.
- Taxon (also known as rank):** Unit of classification.
- An organism is placed into various categories by their characteristics.

**Smart tip - 2**

Taxonomic categories showing hierarchical arrangement in descending order / Similarities between organisms increase in this order:

KINGDOM → PHYLUM → CLASS → ORDER → FAMILY → GENUS → SPECIES

- **Species:** It is a group of individuals with morphological similarities and is capable of interbreeding and producing fertile offsprings.
e.g. *Mangifera indica* (Mango), *Solanum tuberosum* (Potato) and *Panthera leo* (Lion). Here, *indica*, *tuberosum* and *leo* represent the specific epithets which denotes the species.
A genus may have more than one species as in *Panthera leo* (lion), *Panthera pardus* (leopard), *Panthera tigris* (tiger). Usually individuals of one species do not interbreed with individuals of other species.
Humans belong to species *sapiens* which is grouped in the genus *Homo*. The scientific name for human being is *Homo sapiens*.
- **Genus:** It is a group of related species, which shows several common characters in comparison to species of other genera.
e.g. Potato (*Solanum tuberosum*) and brinjal (*Solanum melongena*) belongs to same genus *Solanum* but are different species.
Lion (*Panthera leo*), leopard (*Panthera pardus*) and tiger (*Panthera tigris*) show many common features because they belong to the same genus *Panthera*, but this genus differs from genus *Felis* which includes cats.
- **Family:** It is a group of related genera with lesser number of common characters in comparison to genus and species. It is characterized on the basis of vegetative and reproductive features.
Genera *Solanum*, *Petunia* and *Datura* are placed in the family Solanaceae.
Panthera (lion, tiger, leopard, etc) and *Felis* (cats) are placed in the family Felidae.
Dogs and cats have some similarities and some differences. They are separated onto two different families – Felidae and Canidae respectively.

**Smart tip - 3**

Name of the family usually ends with “idae” in animals and “aceae” in plants.

- **Order:** It is an assemblage of families which exhibit a few similar characters.
The similar characters are less in number as compared to different genera included in a family.
Plant families like Convolvulaceae, Solanaceae are included in order Polymoniales on the basis of the floral characters.
Order Carnivora includes families like Felidae and Canidae.

[**Note:** The Solanales are an order of flowering plants including plant families like Convolvulacea and Solanaceae. Some older sources used the name Polemoniales for this order.]

- **Class:** It includes related orders.
Order Primata includes monkey, gorilla and gibbon and order Carnivora includes animals like tiger, cat and dog. Both the orders are placed under class Mammalia.



- **Phylum:** Phylum includes organisms belonging to different classes having very few characteristics in common.
Classes of animals like fishes, amphibians, reptiles, birds along with mammals constitute a higher category called Phylum.
Based on features like presence of notochord, dorsal hollow neural system they are included in phylum Chordata.



CAUTION

In case of plants, classes with similar characters are assigned to higher category called **Division**. It is equivalent to **Phylum**.

- **Kingdom:**
It is the highest category.
In the classification system of animals, all animals belonging to various phyla are assigned to highest category called Kingdom Animalia.
Similarly all plants from various divisions are placed under Kingdom Plantae.



SMART CODE - 1

Taxonomic Categories

Kids Prefer Candy Over Fried Green Spinach

K – Kingdom, **P** – Phylum, **C** – Class, **O** – Order, **F** – Family, **G** – Genus, **S** – Species

- **Organisms with their Taxonomic Categories**

Common Name	Biological Name	Genus	Family	Order	Class	Phylum/ Division
Man	<i>Homo sapiens</i>	<i>Homo</i>	Hominidae	Primata	Mammalia	Chordata
Housefly	<i>Musca domestica</i>	<i>Musca</i>	Muscidae	Diptera	Insecta	Arthropoda
Mango	<i>Mangifera indica</i>	<i>Mangifera</i>	Anacardiaceae	Sapindales	Dicotyledonae	Angiospermae
Wheat	<i>Triticum aestivum</i>	<i>Triticum</i>	Poaceae	Poales	Monocotyledonae	Angiospermae

GG - Gyan Guru

Tautonym

It is a specific name in which the same word is used for genus as well as species.
Examples of tautonyms are as follows: *Bison bison* – American bison, *Gorilla gorilla* – Western gorilla, *Mola mola* – Ocean sunfish, *Bubo bubo* – Eurasian eagle owl, *Natrix natrix* – European grass snake.

1.4 TAXONOMICAL AIDS

- Taxonomic studies of various species of plants, animals and other organisms are useful in agriculture, forestry, industry, and knowing our bio-resources and their diversities.
- Biologists have established certain procedures and techniques to store and preserve the information as well as the specimens.

Some of the taxonomic aids are:

a. Herbarium:

- It is a store house of plant specimens.
- Plants collected, dried, pressed, preserved on sheets then sheets are arranged according to universally accepted system of classification and these then become a store house or repository for future use.



3. They carry a label which contains date and place of collection in English and local language. It also contains botanical names, family and collector's name, etc.
 4. It serves as a quick referral systems in taxonomic studies.
- b. Botanical Gardens:**
1. They are collections of living plants for reference.
 2. Each plant is labelled with its scientific name and its family.
 3. Some of the famous botanical gardens are: Kew (England), Indian Botanical Garden (Howrah-India), and National Botanical Research Institute (Lucknow- India)
- c. Museums:**
1. They are collections of preserved plant and animal specimens for study and reference.
 2. Specimens are preserved in jars or containers in preservative solutions.
 3. Plants and animals can also be preserved as dry specimens.
 4. Insects are preserved in insect box after collecting, killing and pinning.
 5. Larger animals, birds and mammals are stuffed and preserved.
 6. There are also collections of skeletons of different animals.
- d. Zoological Parks:**
1. Wild animals are kept in protected environments under human care in zoological parks.
 2. This helps us to learn about their food habits and behavior.
 3. Animals are provided with conditions similar to their natural habitats.
- e. Key:**
1. It is used for identification of plants and animals based on the similarities and dissimilarities. They are analytical in nature.
 2. It is based on contrasting characters in a pair called **couplet**.
 3. It is analytical in nature, because choice is made between two opposite options in which one is selected and other one is rejected.
 4. Each statement in the key is called lead.
 5. Each taxonomic category requires separate taxonomic keys for the identification purpose.

Students are expected to refer the given Q. R. code for additional information on keys.



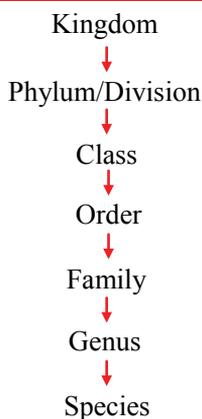
f. Recording Descriptions:

1. Flora, manuals, monographs and catalogues are the means of recording descriptions.
2. They help in correct identification.
3. Actual account of habitat and distribution of plants of a given area are included in **Flora**. It provides the index to the plant species found in a particular area.
4. **Manuals** provide information for identification of name of species found in area.
5. **Monographs** contain information on any of the one taxon.
6. **Catalogue** is an ordered list of plants and animals with brief description which also helps in identification of plants and animals.



Quick Review

Taxonomic Categories





Hierarchical category	Scientific classification	Examples of Organisms included (Common name)
Kingdom	Animalia	Squirrel, Snail, Beetle, Jellyfish, Lizard, <i>Planaria</i> , Lion, Human, Whale, Leopard, Dog, Cheetah
Phylum/ Division	Chordata	Squirrel, Lizard, Lion, Human, Whale, Leopard, Dog, Cheetah
Class	Mammalia	Squirrel, Lion, Human, Whale, Leopard, Dog, Cheetah
Order	Carnivora	Lion, Leopard, Dog, Cheetah
Family	Felidae	Lion, Leopard, Cheetah
Genus	<i>Panthera</i>	Lion, Leopard
Species	<i>Panthera leo</i>	Lion

Number of common characteristics between organisms increases

Taxonomical Aids



Recording Descriptions



Glossary

Word	Meaning
Couplet	Pair of sentences in a taxonomic key that are mutually exclusive and contrasting to each other.
Emergence	Emergence occurs when an entity is observed to have properties its parts do not have on their own. These properties or behaviors emerge only when the parts interact in a wider whole. e.g. Emergent structures are a common strategy found in many animal groups: colonies of ants, mounds built by termites, swarms of bees.
Taxonomist	Biologist that groups organisms into categories.
Specific epithet	Species name

Multiple Choice Questions

1.1 WHAT IS LIVING?

- All living organisms are linked to one another because **[NCERT Exemplar]**
 - they have common genetic material of the same type
 - they share common genetic material but to varying degrees
 - all have common cellular organisation
 - all of the above
- How many of the following properties are the defining characteristics of living organisms? Growth, reproduction, metabolism, cellular organisation, consciousness.
 - 5
 - 3
 - 2
 - 4
- Match the Column-I with Column-II and select the correct option:

	Column I		Column II
i.	Increase in number of cells	a.	Consciousness
ii.	Chemical reactions	b.	Reproduction

iii.	Response to stimuli	c.	Metabolism
iv.	Budding	d.	Growth

- i – a, ii – b, iii – d, iv – c
 - i – d, ii – c, iii – a, iv – b
 - i – b, ii – c, iii – a, iv – d
 - i – d, ii – b, iii – c, iv – a
- Which of the following is a defining characteristic of living organisms? **[NCERT Exemplar]**
 - Growth
 - Ability to make sound
 - Reproduction
 - Response to external stimuli
 - Self-consciousness is the property of
 - human beings only
 - prokaryotes only
 - all living organisms
 - eukaryotes only
 - Which of the following cannot reproduce?
 - Amoeba*
 - Mule
 - Fungi
 - Planaria*



7. Which amongst the following multiply by fragmentation?
(A) *Planaria* (B) *Amoeba*
(C) Bacteria (D) Virus
8. **Assertion:** True regeneration can be observed in *Planaria*.
Reason: A fragmented *Planaria*, regenerates the lost part of its body and develops into a new organism.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.
9. Regeneration as a method of asexual reproduction is observed in _____.
[MHT CET 2018]
(A) *Ascaris* (B) *Planaria*
(C) Prawn (D) *Salmonella*
10. Select the MISMATCHED pair from the following.
(A) Fungi – Asexual spores
(B) Yeast – Budding
(C) *Amoeba* – Binary fission
(D) Protonema – True regeneration
4. Which of the following is against the rules of ICBN?
[NEET Odisha 2019]
(A) Generic and specific names should be written starting with small letters.
(B) Hand written scientific names should be underlined.
(C) Every species should have a generic name and a specific epithet.
(D) Scientific names are in Latin and should be italicized.
5. Nomenclature is governed by certain universal rules. Which one of the following is contrary to the rules of nomenclature?
[NEET P-I 2016]
(A) The names are written in Latin and are italicised.
(B) When written by hand, the names are to be underlined.
(C) Biological names can be written in any language.
(D) The first word in a biological name represents the genus name, and the second is a specific epithet.
6. Opt for the appropriate way of writing biological name from below
(A) *Mangifera Indica*
(B) *Panthera leo*
(C) *Solanum tuberosum*
(D) *solanum nigrum*

1.2 DIVERSITY IN THE LIVING WORLD

1. Who gave the nomenclature according to which humans are called *Homo sapiens*?
[BCECE 2015]
(A) Darwin (B) Mendel
(C) Aristotle (D) Linnaeus
2. Which one of the following is true for the given sentence?
For the plants, scientific names are provided by
(A) International Code for Botanical Nomenclature
(B) International Code for Biological Nomenclature
(C) International Class for Botanical Nomenclature
(D) International Class for Biological Nomenclature
3. Animal taxonomists have named the animals according to
(A) Indian Code for Zoology Nomenclature
(B) International Class for Zoology Nomenclature
(C) International Classification for Zoological Nomenclature
(D) International Code for Zoological Nomenclature
7. Select the correctly written scientific name of Mango which was first described by Carlous Linnaeus:
[NEET (UG) 2019]
(A) *Mangifera indica*
(B) *Mangifera Indica*
(C) *Mangifera indica* Car. Linn.
(D) *Mangifera indica* Linn.
8. Which of the following ensures that each organism has only one name all over the world?
(A) Local name
(B) Scientific name
(C) Vernacular name
(D) All of the above
9. **Assertion:** As we explore different areas, new organisms are being identified.
Reason: Vernacular names are chosen for nomenclature of newly found organisms.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.



10. Need for a proper system of classification arises because
 - (A) the organisms of the past cannot be studied without it.
 - (B) it helps in knowing the relationships among the different groups of organisms.
 - (C) it is not possible to study every organism.
 - (D) all of these
11. Branch of science dealing with classification is
 - (A) taxonomy
 - (B) anatomy
 - (C) morphology
 - (D) biology
12. **Assertion:** The study of classification of organisms is called taxonomy.
Reason: Taxonomy and systematics have the same meaning.
 - (A) Both assertion and reason are true and reason is the correct explanation of assertion.
 - (B) Both assertion and reason are true but reason is not the correct explanation of assertion.
 - (C) Assertion is true but reason is false.
 - (D) Both assertion and reason are false.
13. The term 'systematics' refers to

[NCERT Exemplar]

 - (A) identification and study of organ systems.
 - (B) identification and preservation of plants and animals.
 - (C) diversity of different kinds of organisms and their relationship.
 - (D) study of habitats of organisms and their classification.

1.3 TAXONOMIC CATEGORIES

1. The serial arrangement of taxon is known as
 - (A) Category
 - (B) Classification
 - (C) Hierarchy
 - (D) Taxonomy
2. Lowest category in the hierarchical system of classification is _____. **[MHT CET 2019]**
 - (A) species
 - (B) order
 - (C) kingdom
 - (D) genus
3. Which is the highest in the hierarchy of taxonomic category? **[BCECE 2015]**
 - (A) Genus
 - (B) Family
 - (C) Order
 - (D) Class

4. As we go from species to kingdom in a taxonomic hierarchy, the number of common characteristics **[NCERT Exemplar]**
 - (A) will decrease
 - (B) will increase
 - (C) remain same
 - (D) may increase or decrease
5. In a taxonomic hierarchy, the number of characters will increase as we go from **[KCET 2016]**
 - (A) Class to Order
 - (B) Species to Kingdom
 - (C) Genus to Species
 - (D) Kingdom to Species
6. Which of the following taxonomical ranks contain organisms, least similar to one another?
 - (A) Class
 - (B) Genus
 - (C) Family
 - (D) Species
7. A group of plants with similar traits of any rank is
 - (A) species
 - (B) genus
 - (C) order
 - (D) taxon
8. Which of the following is NOT a taxon but category?
 - (A) Division
 - (B) Dicotyledons
 - (C) Angiosperms
 - (D) Monocotyledonae
9. In the system of classification, which one of the following is NOT a category? **[MHT CET 2018]**
 - (A) Kingdom
 - (B) Series
 - (C) Angiospermae
 - (D) Genus
10. The correct sequence of taxonomic hierarchy is **[KCET 2018]**
 - (A) Genus → Family → Class → Order → Phylum → Kingdom → Species
 - (B) Species → Genus → Family → Order → Class → Phylum → Kingdom
 - (C) Species → Family → Genus → Kingdom → Order → Class → Phylum
 - (D) Species → Genus → Family → Class → Order → Phylum → Kingdom
11. Genus represents **[NCERT Exemplar]**
 - (A) an individual plant or animal
 - (B) a collection of plants or animals
 - (C) group of closely related species of plants or animals
 - (D) none of these.



12.



Choose the correct classification of the given picture of the animal.

	Phylum	Class	Order	Family	Genus	Species
(A)	Chordata	Vertebrata	Primata	Felidae	<i>Panthera</i>	<i>leo</i>
(B)	Chordata	Mammalia	Carnivora	Felidae	<i>Panthera</i>	<i>leo</i>
(C)	Vertebrata	Mammalia	Carnivora	Canidae	<i>Canis</i>	<i>leo</i>
(D)	Vertebrata	Mammalia	Primata	Canidae	<i>Canis</i>	<i>leo</i>

13.



Select the correct option to complete the given table.

Common name	Biological name	Phylum/ Division	Class	Order	Family	Genus
Man	<i>Homo sapiens</i>	Chordata	Mammalia	Primata	(i)	<i>Homo</i>
Housefly	<i>Musca domestica</i>	Arthropoda	Insecta	(ii)	Muscidae	<i>Musca</i>
Mango	<i>Mangifera indica</i>	Angiospermae	(iii)	Sapindales	Anacardiaceae	<i>Mangifera</i>
Wheat	<i>Triticum aestivum</i>	(iv)	Monocotyledonae	Poales	Poaceae	<i>Triticum</i>

	i.	ii.	iii.	iv.
(A)	Hominidae	Diptera	Dicotyledonae	Angiospermae
(B)	Hominidae	Dicotyledonae	Diptera	Angiospermae
(C)	Hominidae	Diptera	Angiospermae	Dicotyledonae
(D)	Hominidae	Dicotyledonae	Angiospermae	Diptera

14.

Two organisms are from the same phylum, but different family. They may belong to the same

- (A) Species
(B) Order
(C) Genus
(D) none of the above

15.



Identify the correct sequence of taxonomic hierarchical arrangement in ascending order of the following.

- (A) Angiospermae, Monocotyledonae, Poales, Poaceae, *Triticum*
(B) *Triticum*, Poales, Poaceae, Monocotyledonae, Angiospermae
(C) *Triticum*, Poaceae, Poales, Monocotyledonae, Angiospermae
(D) Monocotyledonae, Poaceae, Poales, Angiospermae, *Triticum*

16.



Match the following and choose the correct option. [NCERT Exemplar]

	Column I		Column II
i.	Family	a.	<i>tuberosum</i>
ii.	Kingdom	b.	polymoniales

iii.	Order	c.	<i>Solanum</i>
iv.	Species	d.	plantae
v.	Genus	e.	<i>Solanaceae</i>

- (A) i – d, ii – c, iii – e, iv – b, v – a
(B) i – e, ii – d, iii – b, iv – a, v – c
(C) i – d, ii – e, iii – b, iv – a, v – c
(D) i – e, ii – c, iii – b, iv – a, v – d

17. **Assertion:** Dogs and cats have some similarities.

Reason: They belong to the same family Felidae.

- (A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.



18. Select the INCORRECT set from the following:
- (A) Anacardiaceae – *Solanum*, *Petunia*
 - (B) Primata – Gorilla, Gibbon
 - (C) Carnivora – Felidae, Canidae
 - (D) *Panthera* – Leopard, Tiger

19. Which one is the MISMATCHED pair?
- (A) Potato – *Solanum tuberosum*
 - (B) Wheat – *Triticum aestivum*
 - (C) Mango – *Musca domestica*
 - (D) Lion – *Panthera leo*

20. Match Column-I with Column-II for housefly classification and select the correct option using the codes given below:

	Column-I		Column-II
i.	Family	a.	Diptera
ii.	Order	b.	Arthropoda
iii.	Class	c.	Muscidae
iv.	Phylum	d.	Insecta

[NEET P-II 2016]

- (A) i – d, ii – b, iii – a, iv – c
- (B) i – c, ii – a, iii – d, iv – b
- (C) i – b, ii – c, iii – d, iv – a
- (D) i – d, ii – c, iii – b, iv – a

21. Match the following.

	List - I		List - II
i.	Order	a.	<i>nigrum</i>
ii.	Species	b.	Polemoniales
iii.	Family	c.	<i>Solanum</i>
iv.	Class	d.	Solanaceae
		e.	Dicotyledonae

[TS EAMCET 2018]

The correct answer is

- (A) i – b, ii – a, iii – c, iv – e
- (B) i – c, ii – e, iii – d, iv – b
- (C) i – b, ii – a, iii – d, iv – e
- (D) i – a, ii – c, iii – e, iv – b

22. Identify the 'Order' from the following.

[KCET 2017]

- (A) Carnivora
- (B) Muscidae
- (C) Insecta
- (D) *Panthera*

23. Select the INCORRECT statement from the following.

- (A) *Mangifera*, *Solanum* and *Panthera* represent generic epithets.
- (B) *Panthera* and *Felis* belong to family Felidae.
- (C) *leo*, *aestivum* and *musca* represent specific epithets.
- (D) Mango belongs to order Sapindales.

24. **Assertion:** An order may have many classes.

Reason: All the classes of an order have common features.

- (A) Both assertion and reason are true and reason is the correct explanation of assertion.
- (B) Both assertion and reason are true but reason is not the correct explanation of assertion.
- (C) Assertion is true but reason is false.
- (D) Both assertion and reason are false.

25. Which of the following 'suffixes' used for units of classification in plants indicates a taxonomic category of 'Family'? [NCERT Exemplar]

- (A) – ales
- (B) – onae
- (C) – aceae
- (D) – ae

26. The taxonomic unit 'Phylum' in the classification of animals is equivalent to which hierarchical level in classification of plants?

[NCERT Exemplar]

- (A) Class
- (B) Order
- (C) Division
- (D) Family

27. **Assertion:** The system of providing a scientific name to any organism is called binomial nomenclature.

Reason: Each taxonomic group should have two names.

- (A) Both assertion and reason are true and reason is the correct explanation of assertion.
- (B) Both assertion and reason are true but reason is not the correct explanation of assertion.
- (C) Assertion is true but reason is false.
- (D) Both assertion and reason are false.

1.4 TAXONOMICAL AIDS

1. Kew, England is famous for
 - (A) being the largest biological reserve
 - (B) herbarium
 - (C) being the largest botanical garden
 - (D) diverse flora and fauna
2. Botanical gardens and zoological parks have
 - (A) collection of endemic living species only
 - (B) collection of exotic living species only
 - (C) collection of endemic and exotic living species
 - (D) collection of only local plants and animals.

[NCERT Exemplar]
3. A place where wild animals are kept in specially created environment is known as
 - (A) zoological park
 - (B) botanical garden
 - (C) herbarium
 - (D) all of these



4. A zoological garden has all of the following characteristics, except
 (A) wild animals are under human care.
 (B) wild animals are provided conditions similar to their natural habitat.
 (C) it enables us to understand the skeletons and integumentary systems of wild animals.
 (D) it enables us to know about the food habits and behaviour of wild animals.

5. Match the column and select the correct option

	Column I		Column II
i.	Flora	a.	Provide information to identify names and species in an area.
ii.	Manuals	b.	Provide information on any one taxon.
iii.	Monographs	c.	Analytical in nature.
iv.	Keys	d.	Provide index to the plant species.

- (A) i – a, ii – b, iii – c, iv – d
 (B) i – a, ii – c, iii – b, iv – d
 (C) i – d, ii – a, iii – b, iv – c
 (D) i – d, ii – c, iii – a, iv – b

6. Which one of the following is NOT a correct statement? **[NEET 2013]**

- (A) Herbarium houses dried, pressed and preserved plant specimens.
 (B) Botanical gardens have collection of living plants for reference.
 (C) A museum has collection of photographs of plants and animals.
 (D) Key is a taxonomic aid for identification of specimens.

7. The contrasting characteristics generally in a pair used for identification of animals in Taxonomic Key are referred to as: **[NEET Odisha 2019]**

- (A) Alternate (B) Lead
 (C) Couplet (D) Doublet

8. The label of a herbarium sheet does not carry information on **[NEET P-II 2016]**

- (A) height of the plant
 (B) date of collection

- (C) name of collector
 (D) local names

9. Taxonomic key is one of the taxonomic tools in the identification and classification of plants and animals. It is used in the preparation of

[NCERT Exemplar]

- (A) monographs (B) flora
 (C) both (A) and (B) (D) none of these

10. **Assertion:** Monographs provide index to the plant species found in a particular area.

Reason: Monographs provide information for the identification of names of species found in an area.

- (A) Both assertion and reason are true and reason is the correct explanation of assertion.
 (B) Both assertion and reason are true but reason is not the correct explanation of assertion.
 (C) Assertion is true but reason is false.
 (D) Both assertion and reason are false.

11. Match the items given in Column I with those in Column II and select the correct option given below: **[NEET (UG) 2018]**

	Column I		Column II
i.	Herbarium	a.	It is a place having a collection of preserved plants and animals
ii.	Key	b.	A list that numerates methodically all the species found in an area with brief description aiding identification
iii.	Museum	c.	It is a place where dried and pressed plant specimens mounted on sheets are kept
iv.	Catalogue	d.	A booklet containing a list of characters and their alternates which are helpful in identification of various taxa.

- (A) i – b, ii – d, iii – c, iv – a
 (B) i – c, ii – b, iii – a, iv – d
 (C) i – a, ii – d, iii – c, iv – b
 (D) i – c, ii – d, iii – a, iv – b



Answers to MCQs

1.1 :	1. (B) 2. (B) 3. (B) 4. (D) 5. (A) 6. (B) 7. (A) 8. (A) 9. (B) 10. (D)
1.2 :	1. (D) 2. (A) 3. (D) 4. (A) 5. (C) 6. (C) 7. (D) 8. (B) 9. (C) 10. (D) 11. (A) 12. (C) 13. (C)
1.3 :	1. (C) 2. (A) 3. (D) 4. (A) 5. (D) 6. (A) 7. (D) 8. (A) 9. (C) 10. (B) 11. (C) 12. (B) 13. (A) 14. (B) 15. (C) 16. (B) 17. (C) 18. (A) 19. (C) 20. (B) 21. (C) 22. (A) 23. (C) 24. (D) 25. (C) 26. (C) 27. (C)
1.4 :	1. (C) 2. (C) 3. (A) 4. (C) 5. (C) 6. (C) 7. (C) 8. (A) 9. (C) 10. (D) 11. (D)



Hints to MCQs

1.1 WHAT IS LIVING?

2. Refer *Smart tip - 1*

3.

**Thinking Hatke - Q. 3**

Budding is a type of asexual reproduction so 'iv' of column I matches with 'b' of column II. Thus, this eliminates the options A, C and D. Hence, the correct answer is option B.

4. Refer *Smart tip - 1*

7. *Amoeba* divides by binary and multiple fission. Bacteria divide by binary fission. Viral replication takes place via lytic or lysogenic cycle in the host cell. It cannot replicate outside the host cell.

9. Generally multicellular organisms like *Ascaris* and prawns reproduce sexually. In case of bacteria, reproduction is synonymous with growth. However, *Planaria* reproduce by true regeneration (asexual reproduction).

10. Protonema of mosses multiplies by fragmentation.

1.2 DIVERSITY IN THE LIVING WORLD

4. The generic name should start with a capital letter while the species name should start with a small letter.

5. Biological names are generally written in Latin.

9. As new organisms are identified, they are classified according to binomial nomenclature.

10. Classification helps in understanding diverse varieties of organisms and also gives an idea about the origin and evolution of organisms which are morphologically similar.

12. Taxonomy is the identification and classification of the organisms. Systematics is the study of diversity of organisms and their relationships.

1.3 TAXONOMIC CATEGORIES

2. Refer *Smart tip - 2*

3. Refer *Smart tip - 2*

4. Refer *Smart tip - 2*

5. Refer *Smart tip - 2*

6. Refer *Smart tip - 2*

9. Category is a rank or level in the hierarchical classification of organisms. Angiospermae is a taxon.

10. Refer *Smart tip - 2*

12.

**Thinking Hatke - Q. 12**

The given picture is of lion. Scientific name of lion is *Panthera leo*. Therefore, this eliminates options C and D. It belongs to order Carnivora as species classified under this order are meat eaters. Hence, the correct option is B.

13.

**Thinking Hatke - Q. 13**

In the question, it is given that mango belongs to phylum angiospermae. Thus, phylum and class cannot be same i.e. Angiospermae. This eliminates options C and D. Since, mango is Angiospermic and dicotyledonous. The correct option is A.

15.

**Thinking Hatke - Q. 15**

Genus is always written in italics with first letter being capital. Therefore, options A and D are eliminated. In the ascending order genus is followed by family. As we know, name of the family ends with "aceae" in plants and "idae" in animals. This eliminates option B. Hence, the correct option is C.

16.

**Thinking Hatke - Q. 16**

We can easily identify that (ii – Kingdom) in Column I, correctly matches (d – Plantae) in Column II. Hence, options A, C and D can be eliminated and B is the correct option.

17. Dogs belong to the family Canidae and Cats belong to the family Felidae.

18. *Solanum* and *Petunia* belong to family Solanaceae.

19. *Mango - Mangifera indica*
Housefly – *Musca domestica*



20.

**Thinking Hatke - Q. 20**

Since we know, name of the family ends with “idae” in animals so ‘i’ of column I matches with ‘c’ of column II. This eliminates options A, C and D.

21.

**Thinking Hatke - Q. 21**

Species is always written in italics and in small letters so ‘ii’ of column I matches with ‘a’ of column II. This eliminates options B and D. As we know in plants name of the family ends with “aceae” so ‘iii’ of column I matches with ‘d’ of column II. Thus, the correct answer is option C.

22. Insecta – Class
Muscidae – Family
Panthera – Genus

23. *Musca domestica* is biological name of housefly. The word *domestica* represents specific epithet. *Musca* is the generic epithet
24. Order is a category used in the classification of organisms that consists of one or several similar or closely related families. Class includes related orders.
25. Refer **Smart tip - 3**

1.4 TAXONOMICAL AIDS

6. A museum has collection of dead remains of plants and animals in preserved form for study and reference.
10. Flora provides the index to the plant species found in a particular area. Manuals provide information for the identification of names of species found in an area. Monographs provide information on any one taxon.

Topic Test

1. The first step in taxonomy amongst the following is
(A) identification (B) nomenclature
(C) classification (D) description
2. Which of the following statement/s is / are TRUE?
i. Growth cannot be taken as a defining property of living organisms.
ii. *Panthera pardus* is a scientific name of Leopard in which *Panthera* represents specific epithet.
iii. In binomial nomenclature, biological names are derived from Latin irrespective of their origin.
iv. In plants, Orders with few similar characters are assigned to Division.
(A) All are true
(B) Only i and iii are true
(C) Only i and iv are true
(D) Only ii and iii are true
3. Match the columns and select the correct option:
- | | Column I | | Column II |
|------|--------------------------|----|-----------------|
| i. | Carolus Linnaeus | a. | Kingdom Plantae |
| ii. | <i>Solanum tuberosum</i> | b. | Identification |
| iii. | Manuals | c. | <i>Planaria</i> |
| iv. | Regeneration | d. | <i>Amoeba</i> |
| | | e. | Systema Naturae |
- (A) i - b, ii - e, iii - a, iv - d
(B) i - e, ii - d, iii - b, iv - c
(C) i - b, ii - c, iii - a, iv - d
(D) i - e, ii - a, iii - b, iv - c
4. Which of the following statements represents the defining property of living organisms?
(A) Worker bees are sterile.
(B) Plants respond to external factors such as light, temperature, water etc.
(C) Sand mounds grow due to accumulation of matter from outside.
(D) All the above.
5. In binomial nomenclature, name of an animal consists of _____.
(A) three epithets (B) two epithets
(C) one epithet (D) four epithets
6. **Assertion:** Key is analytical in nature.
Reason: Key represents the choice made between two opposite options in which one is selected and other is rejected.
(A) Both assertion and reason are true and reason is the correct explanation of assertion.
(B) Both assertion and reason are true but reason is not the correct explanation of assertion.
(C) Assertion is true but reason is false.
(D) Both assertion and reason are false.
7. While writing the biological name of tiger, both the words should
(A) be separately underlined
(B) be italicised
(C) be written without any space between them
(D) start with capital letters



8. Which of the following number represents INCORRECT classification of organism?

No.	Common name	Phylum / Division	Class	Genus	Species
i.	Mango	Angiospermae	Dicotyledonae	<i>Mangifera</i>	<i>indicus</i>
ii.	Man	Chordata	Mammalia	<i>Homo</i>	<i>sapiens</i>
iii.	Wheat	Angiospermae	Poales	<i>Triticum</i>	<i>aestivum</i>
iv.	Housefly	Arthropoda	Insecta	<i>Musca</i>	<i>pardus</i>

- (A) i, ii and iii (B) i and iv (C) i, iii and iv (D) only ii

9. Reproduction is NOT considered as an all – inclusive defining characteristic of living organisms because

- (A) non – living things can reproduce.
 (B) many organisms cannot reproduce.
 (C) reproduction occurs only at cellular level.
 (D) reproduction occurs only in multicellular organisms.

10. Which of the following is a feature of both living and non-living things?

- (A) Metabolism
 (B) Growth
 (C) Consciousness
 (D) Cellular organization

11. Identify the CORRECT representation of the scientific name of lion.

- (A) *Panthera leo* (B) panthera leo
 (C) *Panthera Leo* (D) Panthera leo

12. Which of the following statements is TRUE?

- (A) Animals classified in the same Order belong to the same Class.
 (B) Animals classified in the same Class belong to the same Family.
 (C) Animals classified in the same Family belong to the same Species.
 (D) Animals belonging to the same Phylum belong to the same Order.

13. Which is the CORRECT ‘Order’ of Mango?

- (A) Angiospermae (B) Sapindales
 (C) Dicotyledonae (D) Anacardiaceae

14. Plant species grown for identification purposes are observed in

- (A) museums
 (B) herbariums
 (C) botanical gardens
 (D) both (B) and (C)

15. Which of the following taxonomic category is at a higher hierarchy than Order?

- (A) Genus (B) Family
 (C) Class (D) Species

16. Which of the following provides an index to plant species found in a particular area?

- (A) Catalogues (B) Manual
 (C) Monograph (D) Flora

Answers

1. (A) 2. (B) 3. (D) 4. (B)
 5. (B) 6. (A) 7. (A) 8. (C)
 9. (B) 10. (B) 11. (A) 12. (A)
 13. (B) 14. (C) 15. (C) 16. (D)



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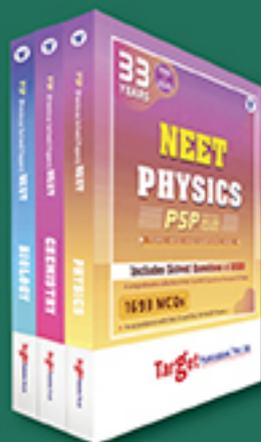
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