SAMPLE CONTENT

Challenger

NEET - UG BIOLOGY Vol - I

As per latest syllabus issued by NMC

2911 MCQs with Hints

For all Medical Entrance Examinations held across India.

Asterias (Starfish)

Kingdom : Animalia
Phylum : Echinodermata

Members of phylum Echinodermata (spiny skinned animals) are characterized by endoskeleton of calcareous ossicles.

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Now with more study techniques

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Challenger
NEET (UG)
Biology Vol. I

Now with more study techniques

Updated as per the latest syllabus prescribed for
NEET (UG) 2024 issued by **NMC on 6th October, 2023**

Salient Features

- Concise theory for every topic
- Eclectic coverage of MCQs under each sub-topic
- Exhaustive coverage of questions including selective questions from previous years' NEET (UG) examinations updated from year 2013-2023:
  - **2911** MCQs
  - Hints provided wherever deemed necessary
- Inclusion of '**Problems To Ponder**' to engage students in scientific enquiry
- Addition of **Smart Keys** to enhance problem solving skills
  - ***Smart Code***
  - ***Smart Tip***
  - ***Caution***
  - ***Think out of the box***
- Includes relevant Solved Questions from:
  - NEET (UG) 2022
  - NEET (UG) 2023
  - NEET (UG) 2023 (Manipur)
- Q.R. codes provide:
  - Video/PDF links for boosting conceptual retention

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PREFACE

'Challenger Biology Vol - I' is a compact guidebook, extremely handy for preparation of NEET-UG exam. This edition provides an unmatched comprehensive amalgamation of theory with MCQs. The chapters are aligned with the latest syllabus for NEET (UG) examination. The book provides the students with scientifically accurate context and relevant supporting details that is essential for a better understanding of biology.

In this book the Theoretical Concepts are presented in the form of pointers, tables, charts and diagrams that form a vital part of preparation for any competitive examination.

Multiple Choice Questions have been specially created and compiled with the objective to help students solve complex problems which require strenuous effort and understanding of multiple-concepts. The assortment of MCQs is a beautiful blend of questions based on higher order thinking, theory and multiple concepts.

MCQs in each chapter are segregated into following sections:

- **Concept Building Problems:** encompasses questions that boost prerequisite understanding of concepts.
- **Practice Problems:** The quality of questions challenges students to apply their scientific knowledge and skills to interpret data while solving the questions.
- **Problems to Ponder:** Questions of different patterns created with the primary objective of helping students to understand the application of various concepts of Biology.

All the features of this book pave the path of a student to excel in the examination. 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.

The book covers selective solved questions of **NEET (UG) 2022, 2023** and **2023 (Manipur)** to offer students a glimpse of the complexity of questions asked in entrance examination.

We hope that this book serves as exceptional tool for student!

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

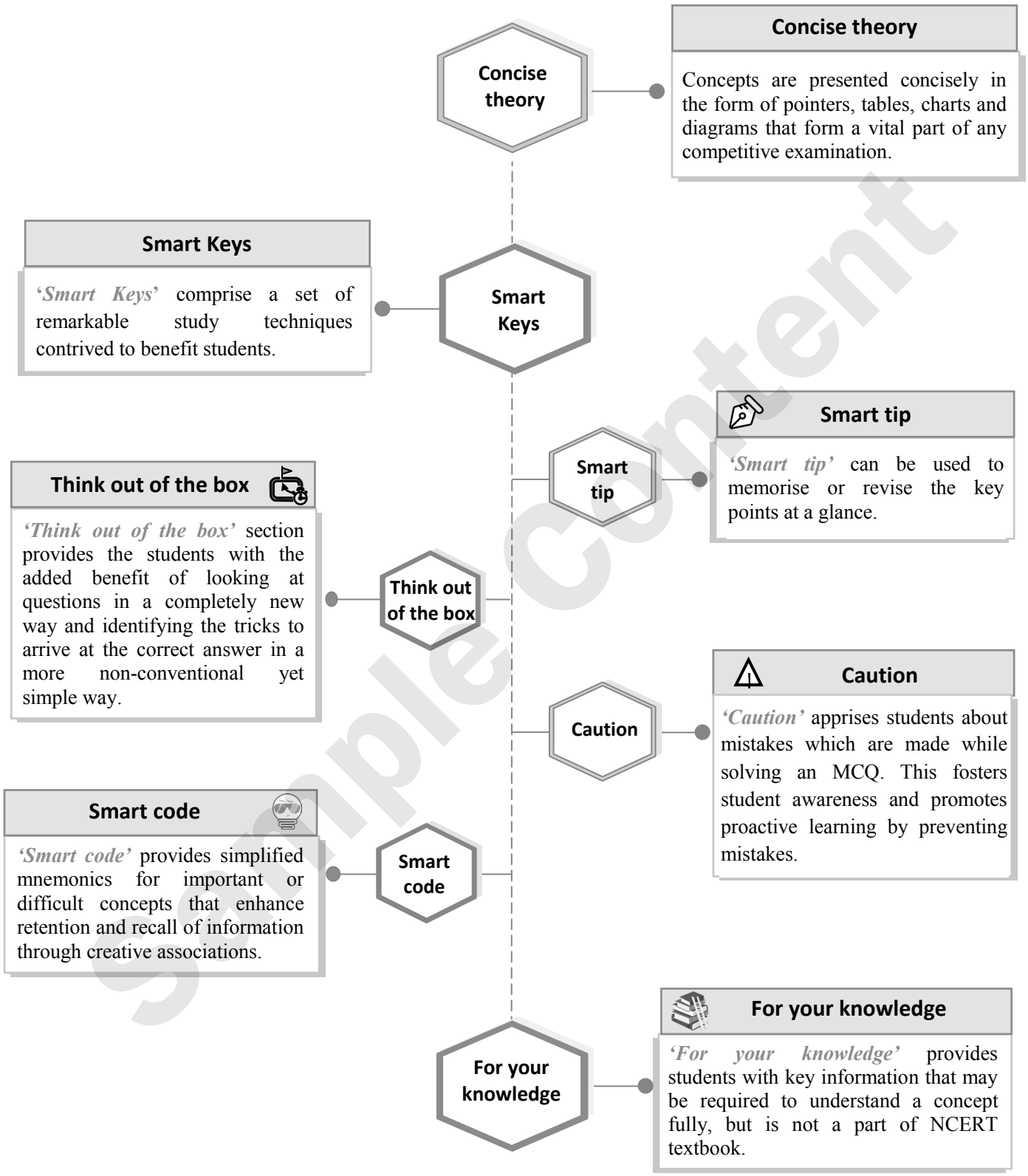
Publisher

Edition: Sixth

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.

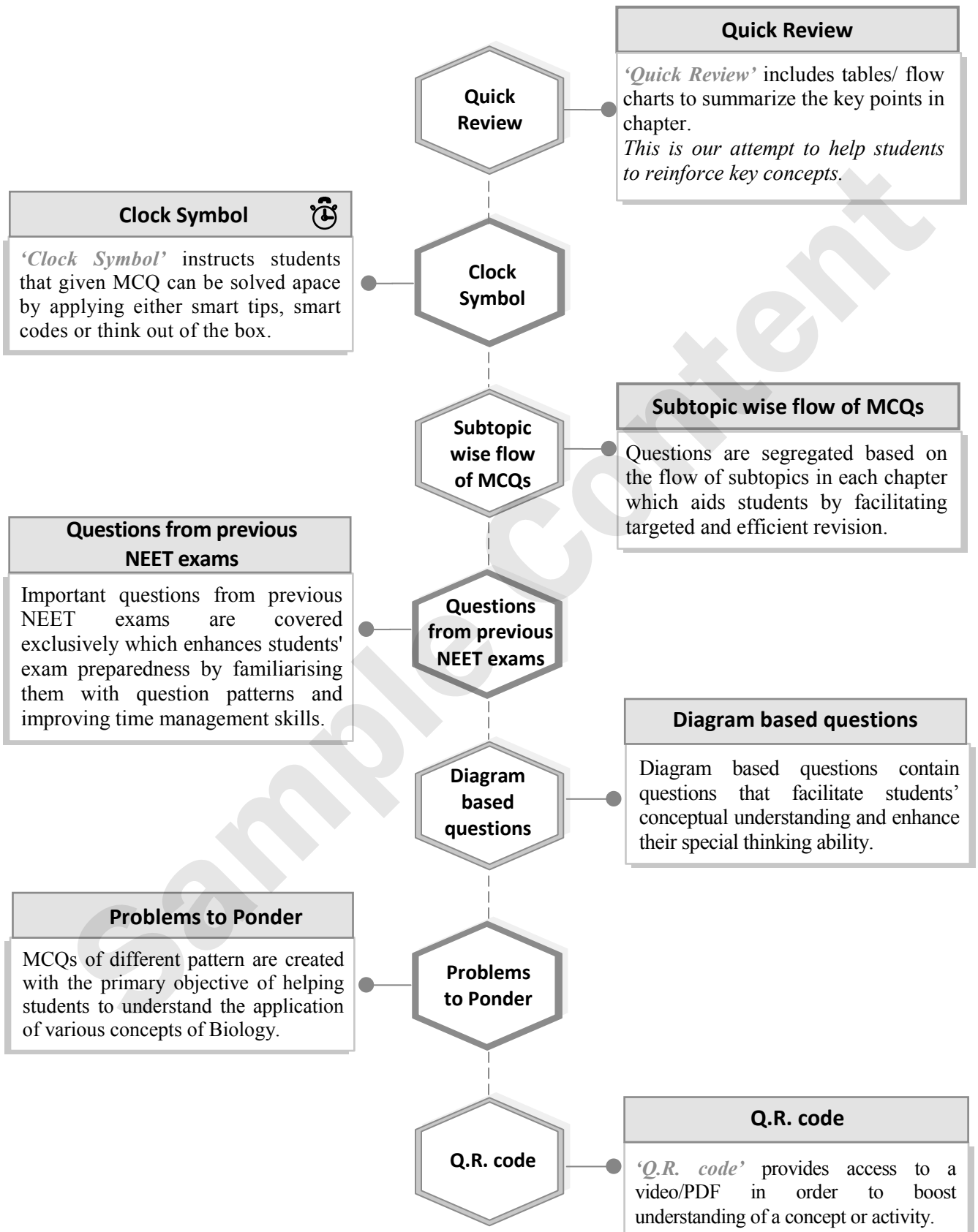
Please write to us on: mail@targetpublications.org

KEY FEATURES



To be continued…

KEY FEATURES



Frequently Asked Questions

- **Why Challenger 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 examination, it is imperative to develop skills such as data interpretation, appropriate time management, knowing various methods to solve a problem, etc. With Challenger 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 section 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 Challenger Series?**

  The sole objective behind the introduction of Challenger Series is to severely test the student's preparedness to take competitive entrance examinations. With an eclectic range of critical and advanced level MCQs, we intend to test a student's MCQ solving skills within a stipulated time period.

- **What do I gain out of Challenger Series?**

  After using Challenger Series, students would be able to:

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

- **Can the Questions presented in Problems to Ponder section be a part of the NEET Examination?**

  No, the questions would not appear as it is in the NEET Examination. However, there are fair chances that these questions could be covered in parts or with a novel question construction.

Best of luck to all the aspirants!

CONTENTS

1 The Living World

- What is Living?
- Diversity in the Living World
- Taxonomic Categories

What is Living?

Living organisms are self-replicating, self-regulating, constantly evolving, highly interactive systems capable of responding to stimulus.

CHARACTERISTICS OF LIVING ORGANISMS

Growth:
i. All living organisms grow. This growth is intrinsic (from inside).
ii. Twin characteristics of growth: Increase in mass and number of individuals.
iii. Growth by cell division occurs in both multicellular and unicellular organisms.
iv. Plants – Growth by cell division occurs continuously throughout their life span.
Animals – Growth by cell division occurs upto a certain age.
v. In non-living objects growth is exhibited by accumulation of material on the surface.
vi. Mountains, boulders and sand mounds also grow.

Reproduction:
i. A process by which multicellular organisms produce a progeny that possess features similar to parents (Sexual Reproduction).
ii. Reproduction by spreading asexual spores - Fungi.
iii. Budding - Yeast and *Hydra*.
iv. True regeneration - *Planaria*.
v. Fragmentation - Fungi, filamentous algae, the protonemma of mosses.
vi. Reproduction is synonymous with growth i.e., increase in number of cells in unicellular organisms like bacteria, algae, *Amoeba*.
vii. Cannot Reproduce - Mules, sterile worker bees, infertile human couples and non-living objects.

Metabolism:
i. All living organisms are made up of chemicals.
ii. Chemicals belong to various classes and sizes etc. and are constantly being made and changed into some other biomolecule.
iii. These conversions are called chemical or metabolic reactions.
iv. All plants, animals, fungi and microbes exhibit metabolism.
v. Non-living objects do not exhibit metabolism.
vi. 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, cytoplasm, etc. that make up the cell.

Consciousness:
i. It is the most complicated feature of all living organism.
ii. With the help of sense organs, humans sense the environment. Human being is the only organism who has self-consciousness.
iii. Plant responds 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 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.

Diversity in the Living World Theory

- **Biodiversity:** The number and types of organisms present on Earth.
- **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 organisms.
- **Nomenclature:** It provides a distinct and proper name to an organism.
  Scientific names are based on certain principles provided by taxonomists:

i. For plants, International Code for Botanical Nomenclature (ICBN).
ii. For animals, International Code for Zoological Nomenclature (ICZN).

Binomial Nomenclature: Naming system given by Carolus Linnaeus.

Rules of Binomial Nomenclature:

i. Biological names are generally in Latin and written in Italics.
ii. Each name has two components - Generic name and the specific epithet (species name).
E.g., *Mangifera indica*
iii. Scientific names when handwritten are separately underlined or printed in italics to indicate their Latin origin.
iv. In scientific name, first word denotes the genus which starts with capital letter, while the second word denotes specific epithet which starts with small letter.
v. Author's name appears after specific epithet and is written in an abbreviated form. E.g., *Mangifera indica* Linn.

- **Classification:** It is the process by which an organism is grouped into convenient categories based on observable characters.
- **Taxonomy:**

i. It is the process of classification of all living organisms into different taxa based on their characteristics.
ii. Any organism is grouped into convenient categories based on some easily observable characteristics. The scientific term for these categories is **taxa**.
iii. Characterisation, identification, classification and nomenclature are the processes that are basic to taxonomy.

- **Systematics**: It is the study of evolutionary relationships among different kinds of organisms and their diversities. "Systema Naturae" was the name aptly given by Linnaeus as the title of his publication.

Taxonomic Categories

- **Taxonomic Category:** It is a rank or level in the hierarchical classification of an organism. It is a part of overall taxonomic arrangement and is hence called taxonomic category. All categories together constitute the taxonomic hierarchy.
- **Taxon:** It represents a unit of classification. Taxon represents definite position in various categories.

Smart tip - 2

Taxonomic Categories showing hierarchical arrangement (descending order)/ Similarities between organisms increase in this order:
KINGDOM → PHYLUM → CLASS → ORDER→ FAMILY → GENUS → SPECIES

- **Species:** It is a group of individual organisms with fundamental similarities.
  tuberosum – Potato (*Solanum tuberosum*)
  leo – Lion (*Panthera leo*)
  tigris – tiger (*Panthera tigris*)
  In the given examples, *Solanum* and *Panthera* are genus while *tuberosum*, *leo*, *tigris* are species.
  Genus *Solanum* also have species like *nigrum* (*Solanum nigrum* – Black night shade) and *melongena* (*Solanum melongena – Eggplant*)
  In *Mangifera indica* (Mango), *Mangifera* is genus, *indica* is species.

- **Genus:** Closely related species are called genus.

Genus	Species
Solanum	*melogena* (brinjal)
	tuberosum (potato)
Panthera	*leo* (Lion)
	pardus (Leopard)
	tigris (Tiger)

- **Family:** It is a group of closely related genera.

Family	Genus
Solanaceae	*Solanum*
	Petunia
	Datura
Felidae	*Panthera*
	Felis

- **Order:** It is a group of closely related families.

Order	Family
Polymoniales	Convolvulaceae
	Solanaceae

Order	Family
Carnivora	Felidae
	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.**]

Smart tip - 3

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

- **Class:** It includes related orders.

Class	Order
Mammalia	Primata
	Carnivora

- **Phylum:** It is composed of related classes.
  Chordata have common features like presence of notochord and dorsal hollow neural system.

Phylum	Class
Chordata	Pisces (fishes)
	Amphibia (amphibian)
	Reptilia (reptiles)
	Mammalia (mammals)

CAUTION

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

- **Kingdom:** Highest taxonomic category.

Kingdom		Phylum		Class		Order		Family		Genus		Species
Animalia	→	Chordata	→	Mammalia	→	Carnivora	→	Felidae	→	*Panthera*	→	*leo*

Smart code - 1

Taxonomic Categories

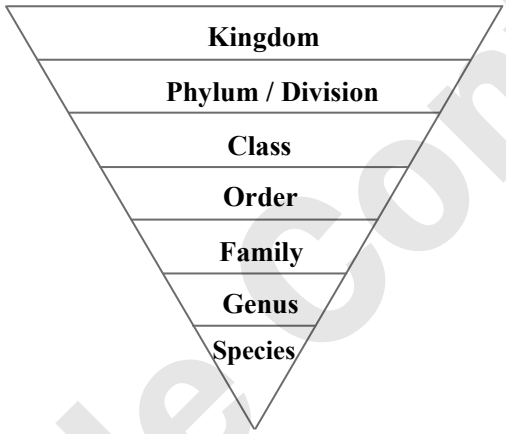
Kids **P**refer **C**andy **O**ver **F**ried **G**reen **S**pinach

K – **K**ingdom, **P** – **P**hylum, **C** – **C**lass, **O** – **O**rder, **F** – **F**amily, **G** – **G**enus, **S** – **S**pecies

➢ **Organisms with their Taxonomic Categories**

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

Quick Review



Concept Building Problems

WHAT IS LIVING?

1. The property shown by both living and non-living things is
   (A) growth
   (B) consciousness
   (C) reproduction
   (D) cellular organization

2. Twin characteristics of growth are
   (A) increase in length and width
   (B) increase in width and number
   (C) increase in mass and number
   (D) increase in size and mass

3. Which of the following statement is TRUE?
   (A) In both mango plant and frog, growth by cell division occurs continuously.
   (B) In Banyan tree, cell division occurs up to a certain age whereas in dog, it occurs continuously.
   (C) In Tulsi plant, growth by cell division occurs continuously whereas in snakes, it occurs only upto a certain age.
   (D) In both potato plant and octopus, growth by cell division occurs only upto a certain age.

4. Match column I and II and select the correct option.

	Column I		Column II
i.	Fungi	a.	Budding
ii.	*Amoeba*	b.	True regeneration
iii.	*Hydra* and Yeast	c.	Asexual Spores
iv.	*Planaria*	d.	Binary fission

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

5. Reproduction is synonymous with growth in
   (A) Bacteria (B) *Amoeba*
   (C) Unicellular algae (D) All of the above

6. Find the ODD one out based on the characteristics of living organisms.
   (A) Mules
   (B) *Hibiscus*
   (C) Sterile worker bees
   (D) Infertile human couples

7. 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

8. Which of the following is INCORRECT regarding asexual reproduction?
   (A) *Spirogyra* reproduces asexually by fragmentation.
   (B) In *Amoeba*, reproduction is synonymous to growth.
   (C) *Planaria* regenerates the lost part of the body and becomes a new organism.
   (D) Mules can reproduce upto a certain age and then become sterile.

9. Which of the following statements is INCORRECT?
   (A) Mountains, boulders and sand mounds do grow if we take increase in body mass as criterion for growth.
   (B) Many organisms like mules, sterile worker bees and infertile human couples do not reproduce at all.
   (C) Living organisms are self-replicating, evolving and self-regulating interactive systems capable of responding to external stimuli.
   (D) Isolated metabolic reactions *in vitro* are living things.

10. Study the four statements (i - iv) given below and select the two correct ones out of them.
   i. Definition of biological species was given by Ernst Mayr.
   ii. Photoperiod does not affect reproduction in plants.
   iii. Binomial nomenclature system was given by R. H. Whittaker.
   iv. In unicellular organisms, reproduction is synonymous with growth.

   [NEET (UG) P-II 2016]

   The two correct statements are
   (A) i and ii (B) ii and iii
   (C) iii and iv (D) i and iv

DIVERSITY IN THE LIVING WORLD

1. Read the following statements and opt for the appropriate conclusion.
   Statement I: Nomenclature is a process wherein standardization of the names of living organisms is done.
   Statement II: Nomenclature helps in identification of organisms, thus after naming, organisms can be described correctly.
   (A) Statement I is correct
   (B) Statement II is correct.
   (C) Both the statements are correct.
   (D) Both the statements are incorrect.

2. Need for a proper system of classification arises because
   (A) the organisms of the past cannot be studied without it.
   (B) classification helps in knowing the relationships among the different groups of organisms.
   (C) it is not possible to study all the living organisms.
   (D) all of these.

3. Nomenclature is governed by certain universal rules. Which one of the following is contrary to the rules of nomenclature?

   [NEET (UG) 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.

4. Which of the following is against the rules of ICBN? **[NEET (UG) 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 italized.

5. According to the binomial nomenclature system, name of the author appears _____.
   (A) before the specific epithet
   (B) after the specific epithet
   (C) before the generic name
   (D) after the generic name

6. Opt for the appropriate way of writing biological name from below.
(A) *Solanum tuberosum*
(B) Panthera leo
(C) *Mangifera Indica*
(D) *solanum nigrum*

7. 'X' and 'Y' are the components of Binomial nomenclature. This naming system was proposed by 'Z'. **[NEET (UG) Manipur 2023]**
(A) X – Specific epithet, Y – Generic name, Z – Carolus Linnaeus
(B) X – Generic name, Y – Specific epithet, Z – R.H. Whittaker
(C) X – Generic name, Y – Specific epithet, Z – Carolus Linnaeus
(D) X – Specific epithet, Y – Generic name, Z – R.H. Whittaker

8. Which one is the mismatched pair?
(A) Wheat – *Triticum aestivum*
(B) Housefly – *Musca domestica*
(C) Mango – *Homo sapiens*
(D) Lion – *Panthera leo*

9. A taxon can be defined as
(A) a group of related species
(B) a group of related genera
(C) a group of any one rank or organisms
(D) a group of organisms having similar number of chromosomes

10. Branch of study of different kinds of organisms, their diversities and also their interactions is referred as _____.
(A) classification (B) nomenclature
(C) hierarchy (D) systematics

11. Systematics includes
(A) only nomenclature
(B) identification, nomenclature and classification
(C) anatomical characters and classification
(D) identification and nomenclature only

Taxonomic Categories

1. The serial arrangement of taxon is known as
(A) Category (B) Classification
(C) Hierarchy (D) Taxonomy

2. Taxonomic hierarchy is
(A) a list of botanists or zoologist who have worked on taxonomy in ICBN and ICZN respectively.
(B) a group of senior taxonomists who decide the nomenclature of plants and animals.
(C) stepwise arrangement of all categories for classification of plants and animals.
(D) classification of a species based on fossil record.

3. The correct sequence of taxonomic hierarchy is
(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

4. In the taxonomic categories which hierarchical arrangement in ascending order is correct in case of animals? **[NEET (UG) 2022]**
(A) Kingdom, Order, Class, Phylum, Family, Genus, Species
(B) Kingdom, Order, Phylum, Class, Family, Genus, Species
(C) Kingdom, Phylum, Class, Order, Family, Genus, Species
(D) Kingdom, Class, Phylum, Family, Order, Genus, Species

5. *Musca* and *pardus* are _____ respectively.
(A) genus and species
(B) genus and genus
(C) species and genus
(D) species and species

6. Genus *Solanum* includes
i. Potato ii. Brinjal
iii. Datura iv. *Petunia*
(A) i, iii (B) i, ii
(C) i, iv (D) i, ii, iii

7. Read the following statements and choose the correct option.
Statement I: Genus includes more than one specific epithets that represent different organisms with least morphological differences.
Statement II: Genus *Solanum* includes species like *melongena* and *nigrum*.
(A) Statement I is correct.
(B) Statement II is correct.
(C) Both Statements I and II are correct.
(D) Both Statements I and II are incorrect.

8. The name of a plant family ends with
(A) –ales (B) –oideae
(C) –aceae (D) None of these

9. Match the column I and II select the correct option.

	Column I		Column II
i.	Man	a.	Poaceae
ii.	*Datura*	b.	Anacardiaceae
iii.	Mango	c.	Solanaceae
iv.	Wheat	d.	Hominidae

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

10. Match the column I and II select the correct option.

	Column I		Column II
i.	Wheat	a.	Primata
ii.	Mango	b.	Diptera
iii.	Housefly	c.	Sapindales
iv.	Man	d.	Poales

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

11. Families like Solanaceae and Convolvulaceae are included in the same order mainly based on
(A) Vegetative characters
(B) Morphological characters
(C) Floral characters
(D) Both (A) and (B)

12. Identify the 'Order' from the following.
(A) Primata (B) Muscidae
(C) Insecta (D) *Panthera*

13. Which taxonomic category of wheat is WRONGLY matched?
(A) Genus - *Triticum*
(B) Family- Poaceae
(C) Order- Sapindales
(D) Class- Monocotyledonae

14. Which of the following taxonomic categories do Diptera and Carnivora belong to?
(A) Order (B) Divisions
(C) Family (D) Class

15. Find the ODD one out.
(A) Primata (B) Diptera
(C) Sapindales (D) Poaceae

16. 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* is printed incorrectly.
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

17. Two organisms are from the same phylum, but different Order. They may belong to the same
(A) Species (B) Class
(C) Genus (D) Family

18. Match the following.

	List - I		List - II
i.	Order	a.	*nigrum*
ii.	Species	b.	Polymoniales
iii.	Family	c.	*Solanum*
iv.	Class	d.	Solanaceae
		e.	Dicotyledonae

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

19. Which one of the following group consists of organisms with least similar characters?
(A) Species (B) Genus
(C) Family (D) Class

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 (UG) P-II 2016]
(A) i – d, ii – b, iii – a, iv – c
(B) i – c, ii – a, iii – d, iv – b
(C) i – c, ii – b, iii – d, iv – c
(D) i – d, ii – c, iii – b, iv – a

21. In the process of classification of animals, the taxonomic unit 'Phylum' is equivalent to which hierarchical level in classification of plants?
(A) Class (B) Order
(C) Division (D) Family

22. Which of the following is NOT a taxon but category?
(A) Division
(B) Dicotyledons
(C) Angiosperms
(D) Monocotyledonae

23. In the system of classification, which one of the following is NOT a category?
(A) Kingdom (B) Series
(C) Angiospermae (D) Genus

24. A connecting link between kingdom and class in plant hierarchy is
(A) family (B) division
(C) phylum (D) order

25. Which of the following taxon has least number of similar characters?
(A) Order (B) Family
(C) Division (D) Class

26. _____ covers the largest number of organisms.
(A) Genus (B) Kingdom
(C) Phylum (D) Family

27. Fishes, amphibians, reptiles, birds and mammals are included in the same category, called
(A) Division (B) Phylum
(C) Order (D) Class

28. Complete the analogy.
Man : *Homo sapiens* :: _____ : *Triticum aestivum.*
(A) Housefly (B) Mango
(C) Wheat (D) Potato

29. Identify the correct sequence of taxonomic hierarchical arrangement in ascending order of the following.
(A) Monocotyledonae, Poaceae, Angiospermae, *Triticum,* Poales.
(B) *Triticum,* Poaceae, Poales, Monocotyledonae, Angispermae.
(C) *Triticum,* Monocotyledonae, Poaceae, Poales, Angiospermae.
(D) Poales, Poaceae, Monocotyledonae, Angiospermae.

30. Which of the following is correctly matched without exception in regard to plant classification?

(A)	Family	Poaceae
(B)	Division	Monocotyledonae
(C)	Class	Angiospermae
(D)	Genus	*indica*

31. Which one of the following belongs to the family Muscidae? **[NEET (UG) 2021]**
(A) House fly (B) Fire fly
(C) Grasshopper (D) Cockroach

Practice Problems

What is Living?

1. **Statement I:** Growth in unicellular organisms can be observed easily in *in vitro* cultures by simply counting the number of cells under microscope.
Statement II: Isolated metabolic reactions *in vitro* cannot be considered as living reactions because no living things are involved.
(A) Statement I is correct.
(B) Statement II is correct.
(C) Both Statements I and II are correct.
(D) Both Statements I and II are incorrect.

2. Which of the following statement is CORRECT?
(A) In Prokaryotes, consciousness cannot be the defining property of living organisms.
(B) In seasonal breeders, photoperiod affect reproduction. Thus, they show property of consciousness.
(C) Human beings and some other mammals have self-consciousness.
(D) All organisms can handle chemicals entering their bodies except plants.

3. Which amongst the following statements is INCORRECT?
(A) Taxonomic keys are based on contrasting characters generally in pair called couplet.
(B) Unicellular organisms grow by cell division.
(C) *Systema Naturae* is the system which provides scientific name to organisms.
(D) Sterile organisms cannot reproduce

Diversity in the Living World

1. Following are the steps for the processes that are basic to taxonomy. Arrange the steps and opt for appropriate answer.
i. Classification ii. Identification
iii. Characterisation iv. Nomenclature
(A) iii → i → iv → ii
(B) ii → i → iii → iv
(C) iii → ii→ i → iv
(D) ii → iii → iv → i

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

3. Organisms with least similar characters, segregate under which of the following taxonomical rank?
(A) Class (B) Genus
(C) Family (D) Species

Taxonomic Categories

1. Match the Column I with Column II and select the correct option.

	Column I		Column II
i.	Family	a.	Includes related orders
ii.	Genus	b.	Group with fundamental similarities
iii.	Species	c.	Characterized on the basis of both vegetative and reproductive features of plant species.
iv.	Class	d.	Aggregates of closely related species

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

2. Which of the following statements is TRUE?
(A) 'Order' is the aggregate of various Phyla.
(B) Genera are the assemblage of related families.
(C) Based on characteristics, organisms are classified into various taxa.
(D) *leo*, *pardus*, *tigris* are the species of genus *Felidae.*

3. Which of the following numbers represents INCORRECT classification of organism?

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

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

4. **Assertion:** Leopards and cats belong to different genus yet have some characters in common.
Reason: Family has a group of related genera hence leopards and cats are put along in the 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.

5. Identify the INCORRECT statement.
(A) *Panthera tigris* belongs to order Carnivora.
(B) Different families in an order have less similar characters than two different genera in the same family.
(C) Lower the category, greater is the difficulty of determining the relationship to other taxa at the same level, which makes classification more complex.
(D) There are many ranks that are generally referred to as taxa.

6. In which of the following the common characteristics go on decreasing?
(A) Species → Genus → Family (B) Division → Class → Order
(C) Class → Order→ Phylum (D) Order → Family → Genus

7. Identify the ODD one out in each of the following sets and select the correct option.
i. Hominidae, Muscidae, Monocotyledonae ii. Primata, Insecta, Diptera
iii. Poales, Carnivora, Chordata iv. Angiospermae, Arthropoda, Dicotyledonae
(A) i – Monocotyledonae, ii – Diptera, iii – Poales, iv – Angiospermae
(B) i – Hominidae, ii – Diptera, iii – Chordata, iv – Arthropoda
(C) i – Monocotyledonae, ii – Insecta, iii – Chordata, iv – Dicotyledonae
(D) i – Muscidae, ii – Primata, iii – Carnivora, iv – Angiospermae

8. Select TRUE statements from the following and choose the right answer from the options given below.
i. The scientific name of humans is *Homo sapiens*. ii. *Systema Naturae* is written by R.H. Whittaker.
iii. Highest taxonomic category is division. iv. Taxonomic group of any rank is taxon.
v. A group of closely related species of organisms represents genus.
vi. The term 'systematics' was coined by Ernst Mayr.
(A) ii, iii, iv and vi (B) i, iii, v and vi (C) i, iv and v (D) ii, iii and vi

9. Select the correct option to complete the given table:

Common name	Phylum/Division	Class	Order	Family
Man	Chordata	Mammalia	Primata	(i)
Housefly	Arthropoda	(ii)	Diptera	Muscidae
Mango	Angiospermae	Dicotyledonae	(iii)	Anacardiaceae
Wheat	Angiospermae	Monocotyledonae	Poales	(iv)

(A) i - Hominidae, ii - Insecta, iii - Sapindales, iv - Poaceae
(B) i - Hominidae, ii - Sapindales, iii - Insecta, iv - Poaceae
(C) i - Hominidae, ii - Insecta, iii - Poaceae, iv – Sapindales
(D) i - Hominidae, ii - Sapindales, iii - Poaceae, iv – Insecta

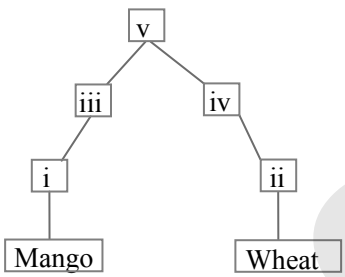
10. The species given below belong to how many different families?
Man, housefly, mango, wheat, dog, cat, lion, tiger, potato, brinjal and leopard
(A) 4 (B) 7 (C) 5 (D) 6

11. Which of the following combinations is correct for wheat?
(A) Genus : *Triticum*, Family : Poaceae, Order : Poales, Class : Dicotyledonae
(B) Genus : *Triticum*, Family : Poaceae, Order : Sapindales, Class : Monocotyledonae
(C) Genus : *Triticum*, Family : Poaceae, Order : Poales, Class : Monocotyledonae
(D) Genus : *Triticum*, Family : Anacardiaceae, Order : Poales, Class : Monocotyledonae

12. Select the CORRECT statement from the following.
(A) Biological names are generally in Greek and written in italics.
(B) Family comprises a group of related species which has more characters in common.
(C) *Triticum aestivum* comes under the Order Sapindales.
(D) Families like Convolvulaceae and Solanaceae are included in the same order mainly based on the floral characters.

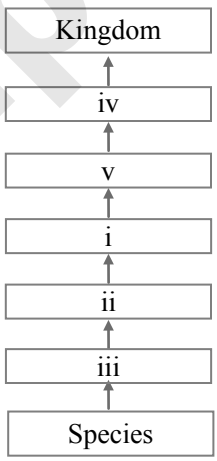
Problems To Ponder

1. Recognise the following flow diagram and the find correct option according to taxonomic hierarchy.



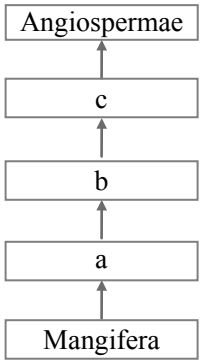
(A) i – Sapindales, ii – Poales, iii – Dicotyledonae, iv – Monocotyledonae, v – Angiospermae
(B) i – Anacardiaceae, ii – Poaceae, iii – Solanaceae, iv – Poales, v – Angiospermae
(C) i – *Mangifera*, ii – *Triticum*, iii – Dicotyledonae, iv – Monocotyledonae, v – Plantae
(D) i – Sapindales, ii – Poales, iii – Angiospermae, iv – Monocotyledonae, v – Plantae

2. In the following flow diagram, identify the correct categories according to the taxonomic hierarchy.



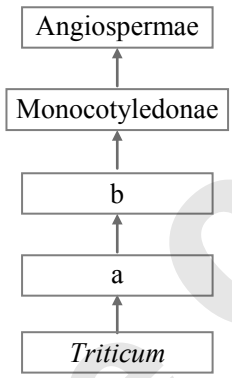
a. Primata, Diptera and Carnivora belong to category i.
b. *Petunia, Datura* and *Solanum* belongs to same category iii.
c. Angiospermae belongs to category v.
d. Man and dog shows maximum similarity at category ii.
e. Category iii is same for lion, tiger and leopard.
Select the correct statement.
(A) a, b, d, e (B) b, c, d, e (C) a, b, c (D) a, b, e

3. Recognise the following flow diagram and find correct option according to taxonomic hierarchy.



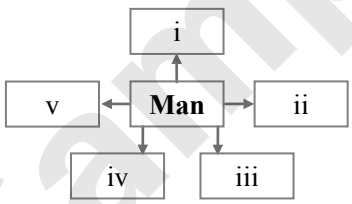
(A) 'a' is comparable to Muscidae, while 'b' is at the same level as that of Primata.
(B) 'c' includes all the angiosperms having two cotyledons in their seeds.
(C) For wheat, 'a' is Poaceae, 'b' is Poales and 'c' is Monocotyledonae.
(D) All of the above are correct statements.

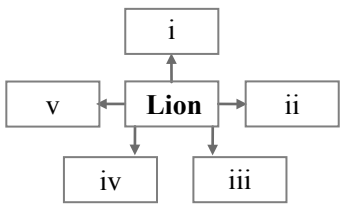
4. Recognise the following flow diagram and select the correct option according to taxonomic hierarchy.



(A) a – Sapindales, b – Anacardiaceae
(B) a – Sapindales, b – Convolvulaceae
(C) a – Poales, b – Solanaceae
(D) a – Poaceae, b – Poales

5. In the given charts, if (i) represents scientific name, (ii) represents family, (iii) represents order, (iv) represents class and (v) represents phylum then, how many taxonomic categories will remain same for both man and lion?





(A) 2 (B) 3 (C) 0 (D) 1

6. Choose the CORRECT set of taxonomic words belonging to the given statements.
i. Taxonomic category showing individual organisms with fundamental similarities.
ii. Taxonomic category with some hierarchial status.

a. Dicotyledonae b. *domestica* c. *indica* d. Insecta
e. *Mangifera* f. *sapiens* g. Mammalia h. Monocotyledonae
i. *aestivum*

(A) bcfi; adgh (B) abch; bcei (C) cdef; ghia (D) abcd; efgh

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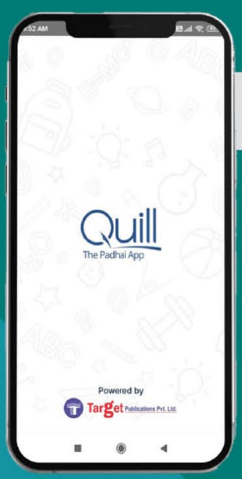

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