

01

The Living World



Introduction

- Life is a precious gift of nature. Life can be explained by its way of working.
- This universe has living and non living entities.
- Viruses are connecting link between living and non living.
- The nature around us is full of living and non living objects. Now it is very essential to know the difference between living and non living.
- Living organisms are self replicating, evolving and self regulating systems, capable of responding to the external stimuli.
- The objects by themselves exhibiting birth, death, life span, consciousness, growth, metabolism are known as living beings.

What is Living

- Living organisms show some unique and distinctive characteristics which help us in recognising and differentiating them from other non-living things.
- The characteristics which we observe commonly in all living beings are growth, reproduction sensitivity, there are some other features which are not seen from outside but we know that they are taking place inside their bodies like metabolic reactions, self-replication, self-organisation etc.

Characteristic of Living Being

All living being share certain characters which are listed below :

1. Growth
2. Reproduction
3. Metabolism
4. Cellular organisation
5. Consciousness

Growth :

- Living things grow by increase in mass and increase in number of individuals/cells.
- Twin characteristics of growth are:
 - (i) Increase in mass
 - (ii) Increase in number
- In multicellular organisms in particular, growth occur by cell division or increase in number of cells.
- Growth occurs continuously throughout life in plants.
- In animals, it occurs up to a certain age only. However, growing in certain body parts like nails, hair and replacement of lost cells, occurs throughout the life.
- In unicellular organisms, growth can be observed under the microscope by simply counting the number of cells via in vitro experiment.
- Non-living things also grow in size, but just by accumulating the material on their external surface. Example : Mountains, Boulders, Sand dunes.



Mountain



Human

- Growth in living things is internal, while in non-living things, it is external. It is to be noted that a dead organism do not grow.
- Growth cannot be taken as defining property of living organisms, though it takes place in all living organisms and is absent in dead organisms.
- Growth is a characteristic of all living organisms.

2. **Reproduction :**

- Reproduction, a characteristic of living organisms is the process of producing offsprings, possessing features similar to those of parents.
- In multicellular organisms, the mode of reproduction is generally sexual.
- Living organisms also reproduce by asexual means.

Some examples are given below

- (i) Fungi spread and multiply fast by producing millions of asexual spores. Some fungi, the filamentous algae and the protonema of mosses multiply by fragmentation.
- (ii) In yeast and *Hydra*, budding occurs to produce new organisms.
In *Planaria* (flatworm), regeneration of fragmented body parts occur. These parts in turn grow as a new organism.
- (iii) Unicellular organisms like bacteria, algae and *Amoeba* reproduce by increasing the number of cells, i.e., through cell division (growth is synonymous with reproduction).
Some organisms like mules, sterile worker bees, infertile human couples, etc., do not reproduce. Hence, reproduction can be regarded as characteristic of living organisms but it is not their exclusive defining characteristic.

3. **Metabolism :**

- Metabolism is an another characteristic and defining feature of all living things.
- The sum total of anabolic or constructive reactions (anabolism) and catabolic or destructive reactions (catabolism) continuously occurring inside the body is called **metabolism**.

Metabolism → Anabolism + Catabolism

- Metabolism occurs in all unicellular and multicellular organisms.
Its two stages include :
 - (i) **Anabolism** : The process of building up or synthesis of complex substances from simpler ones.
Example: Photosynthesis
 - (ii) **Catabolism** : The process of breakdown of complex substances into simpler substances.
Example : Respiration, releasing waste outside.

4. **Consciousness :**

- All living organisms have excellent ability to sense their environment. They respond to various physical, chemical and biological stimuli.
- The various external factors to which living organisms respond are light, water, temperature, pollutants, other organisms, etc.

- Light duration or photoperiod affects many seasonal breeders, plants as well as animals.
- All living things respond to chemicals, entering their bodies.
- Humans are superior to all living things as they have an additional ability of self-consciousness. Therefore, consciousness can also said to be a defining property of living organisms.
- In human beings, it is more difficult to define living state, e g., Patients lying in coma supported by machines that replace heart and lungs, are brain-dead with no self-consciousness.
- Properties of tissues are not present in the constituent cells but arise as a result of interactions among the constituent cells.
- Similarly, properties of cellular organelles are not present in the molecular constituents of the organelle but arise as a result of interactions among the molecular components comprising the organelle.
- These interactions result in emergent properties at a higher level of organisation.
- This phenomenon is true in the hierarchy of organisational complexity at all levels.
- That living organisms are self-replicating, evolving and self-regulating interactive systems capable of responding to external stimuli.

Diversity in the living world

- Biodiversity (Greek word bios = life; diversity = forms) or biological diversity can be defined as the vast array of species of microorganisms, algae, fungi, plants, animals occurring on the earth either in the terrestrial or aquatic habitats and the ecological complexes of which they are a part.
- These different kinds of plants, animals and other organisms are referred to as '**Biodiversity**' of this earth.
- **Biodiversity** is the number and various kinds of organisms found on earth.
- It stands for the variability found among living organisms inhabiting this world.
- Diversity differs from place to place as each habitat has its distinct biota (i.e., life).
- Every time we explore some new or even old areas, new organisms are found or discovered. It is so because environmental conditions of the area vary with time as well as the range of tolerance of species also varies which determine whether or not a particular species can occur in that area.

- According to IUCN (International Union of Conservation of Nature and Natural resources), currently known and described species of all organisms are between **1.7-1.8 million**.
- There are millions of plants, animals and other organisms in the world that cannot be recognised, studied or described by an individual on its own.
- As we recognise the plants or animals in our own area by their local names, which vary from place to place even within a city, state or country as the persons inhabiting in different regions have different languages and perspective.
- There is need to standardise the names of all living organisms after proper identification, in order to study such diverse life forms.
- For better understanding of biodiversity scientists have established a definite system of principles, procedures and terms which identifies, categories and assigns specific name to each and every organism known to us. Such systems are acceptable to all biologists all over the world.
- The scientific need for simple, stable and internationally accepted systems for naming the living organisms of the world has generated, a process called “**Nomenclature**”.
- Before assigning a specific name to an organism, one should determine or know its kind or features correctly, so that one can identify it in each and every part of the world. This is known as “**Identification**”.

Rules and Recommendations of Nomenclature

- Various biologists follow a definite procedure or criteria while studying these variety of organisms which include **-identification, nomenclature and classification**.
- Their study is also facilitated by agreed principles and criteria set by biologists all over the world.
- The set of rules and recommendations dealing with the formal names of plants is given or set in **International Code of Botanical Nomenclature (ICBN)**.
- The rules of scientific naming of animals is assigned in **International Code of Zoological Nomenclature (ICZN)**. Such names which are kept by consent of scientists under codes set by ICBN or ICZN are known as **scientific names**.
- These are universally accepted and each species has only one name, i.e., they are unique for every individual species.

- All the people all over the world are able to correctly identify the name of various living organisms, describe to them. So, these names avoid any kind of ambiguity in names of variety of organisms.

Binomial Nomenclature

- All biologists follow internationally agreed and accepted codes of rules or principles while assigning scientific name to known or newly discovered organisms.
- Binomial nomenclature for scientific naming of organisms was developed by **Carolus Linnaeus**.
- This system provides distinct and proper scientific names to variety of organisms.
- Each name has two parts, i.e., the first part comprises of its **generic name**, while the second part is the **specific epithet**.
- This naming system which uses two word format is universally accepted and used, as it is more convenient to understand and follow.

Rules of Binomial Nomenclature :

- Biological names are generally taken from Latin language irrespective of their origin. New names are now derived either from Latin language or Latinised.
- According to binomial system name of any species consists of two epithet-
Generic epithet - Name of genus
Specific epithet - Trivial name
 Example :
 1. *Solanum tuberosum* (Potato)
 ↓ ↓
 Generic name Specific epithet
 2. *Mangifera indica* (Mango)
 ↓ ↓
 Generic name Specific epithet
- First letter of generic name must be in capital letter and first letter of specific epithet must be in small letter. Example : *Mangifera indica*.
- When scientific name written with free hand or typed, then generic name and specific epithet should be separately underlined. But during printing name should be italisized.
- Name of scientist (who proposed nomenclature) should be written in short after the specific epithet.
 Example : *Mangifera indica* Linn.

Classification

- Once the organism is identified and given a name, it is grouped along with its similar ones, so that its study becomes easier and simpler.
- Biological classification is the scientific arrangement of each and every organism, identified and described in a hierarchical series of groups and sub-groups. This is done on the basis of similarities and differences in their traits (or characters) found in them.
- The process of categorising different organisms, on the basis of some easily observable characters is known as “**Classification**”.
- When we say, wheat, dog or rat, etc., we recognise each of them with its specific characters and are able to discriminate it from others on basis of some other characteristics.
- These specific characteristics shown by the specific organism help us to assign a category to it.
- The specific term for these categories is “taxa”.
- All living organisms can be classified into different taxa on basis of specific characteristics exhibited by them.
- The branch of science which deals with the study of principles and procedures of classification of variety is known as “**Taxonomy**”.
- **Hence, characterisation, identification, classification and nomenclature are the processes that are basic to taxonomy.**
- Taxonomy is not something new. Human beings have always been interested in knowing more and more about the various kinds of organisms, particularly with reference to their own use.
- In early days, human beings needed to find sources for their basic needs of food, clothing and shelter. Hence, the earliest classifications were based on the ‘uses’ of various organisms.
- Human beings were, since long, not only interested in knowing more about different kinds of organisms and their diversities, but also the relationships among them. This branch of study was referred to as systematics.
- The word systematics is derived from the Latin word ‘systema’ which means systematic arrangement of organisms.
- Linnaeus used *Systema Naturae* as the title of his publication.
- The scope of systematics was later enlarged to include identification, nomenclature and classification.
- Systematics takes into account evolutionary relationships between organisms.

DPP-1

- Q.1** Bionomical nomenclature was given by :
- (1) Linnaeus
 - (2) Whittaker
 - (3) Huxley
 - (4) Darwin
- Q.2** ‘*Oryza sativa*’ is a binomial name of rice plant. The ‘*sativa*’ stands for :
- (1) specific name
 - (2) specific epithet
 - (3) species name
 - (4) specific nomenclature
- Q.3** The scientific name of banyan is written as *Ficus benghalensis* L. Which of the following statements is correct regarding this?
- (1) Letter L. signifies Latin language.
 - (2) The name should be written reverse with benghalensis preceding Ficus.
 - (3) Letter L. signifies the taxonomist Linnaeus.
 - (4) benghalensis is a generic name.
- Q.4** Select incorrect statement w.r.t. binomial nomenclature
- (1) Biological names are generally in italics and written in Latin.
 - (2) Generic epithet starts with capital letter.
 - (3) Both names are separately underlined to indicate their Latin origin.
 - (4) Author's name is written after the scientific name in Roman type.
- Q.5** Select incorrect statement w.r.t. growth
- (1) Increase in body mass is criterion for growth in non-living objects
 - (2) Animals grow upto a certain age
 - (3) Growth in plants is definite
 - (4) In living organisms, growth is from inside
- Q.6** Self-consciousness is considered as the property of
- (1) All living organisms
 - (2) Eukaryotes only
 - (3) Prokaryotes only
 - (4) Human beings only

- Q.7** Metabolism can be best defined as —
 (1) the process in which a chemical is formed inside the body
 (2) the process in which a chemical is destroyed inside the body
 (3) the sum total of all chemical reactions occurring in the body
 (4) a complex construction process only
- Q.8** Scientific names of plants are based on agreed principles and criteria which are provided in
 (1) ICZN (2) ICNB
 (3) ICBN (4) ICVCN
- Q.9** Systematics is the study of
 (1) Diversity amongst groups of organisms
 (2) Grouping of organisms
 (3) Identification and grouping of organisms
 (4) Identification, classification and taxonomy
- Q.10** Growth in unicellular organisms can be observed by
 (1) counting the mass of cultured cells
 (2) analysing the amount of nutrients absorbed by living organism
 (3) growth cannot be observed
 (4) simply counting the number of cells under microscope during in vitro culture
- Q.11** Which is first step in taxonomy?
 (1) Description of the organism
 (2) Identification of the organism
 (3) Nomenclature of the organism
 (4) Classification of the organism
- Q.12** The binomial nomenclature system was given by
 (1) Carol Linnaeus
 (2) Carolus Linnaeus
 (3) Aristotle
 (4) Whittaker
- Q.13** Which of the following is a defining characteristic of living organisms?
 (1) Growth
 (2) Ability to make sound
 (3) Reproduction
 (4) Response to external stimuli
- Q.14** In relation to the biological or scientific names, which is wrong?
 (1) Scientific names are generally in Latin and printed in Italics
 (2) Scientific names ensure that one organism has only one name
 (3) Scientific names are used all over the world
 (4) One scientific name can be used for two related species
- Q.15** Which is not the component of taxonomy?
 (1) Identification
 (2) Responsiveness
 (3) Nomenclature
 (4) Classification

Taxonomic Categories

- Classification is not a single step process.
- It involves hierarchy of steps in which each step represents a rank or category.
- The category is a part of overall taxonomic arrangement, it is called the taxonomic category and all categories together constitute the taxonomic hierarchy.
- These definite categories or ranks in classification of plants, animals and other organisms are:
 - (i) Kingdom
 - (ii) Phylum (for animals) or division (for plants)
 - (iii) Class
 - (iv) Order
 - (v) Family
 - (vi) Genus
 - (vii) Species
- These seven obligate categories in which all living organisms are classified are arranged in a descending sequence starting from kingdom upto species or in an ascending order from species to kingdom.
- The number of similar characters of categories decreases from lowest rank. i.e., species ; to highest rank, i.e., kingdom.
- (i) Specificity decreases when we go from species to kingdom, i.e., the higher the category, lesser will be the number of similar characteristics of organisms belonging to that category, while when we go from kingdom to species, i.e., in an descending order the number of similar characteristics of organisms increases, i.e., specificity increases.

- In taxonomic hierarchy, taxonomic groups, i.e., taxa are arranged in a definite order, from higher to lower categories and in which **species serves as the basic and lowest category.**
- To categorise an individual or group of organisms in a definite rank, we should have all the basic knowledge of its characteristics. This would help us in identifying the similarities and dissimilarities among the individuals of the same kind of organisms as well as of other kinds of organisms.
- Here, we will explain all the seven broad or obligate categories of taxonomic hierarchy.

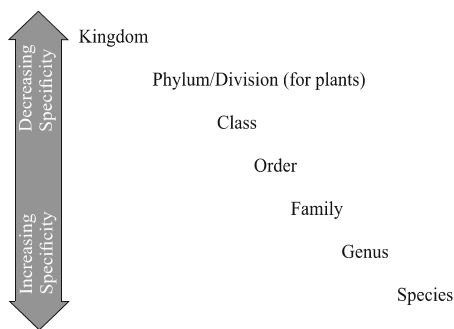


Figure : Taxonomic categories showing hierarchical arrangement in descending and ascending order

- These taxonomic groups/categories are distinct biological entities and not merely morphological aggregates.

(i) Species

- Species is considered as the lowest or basic taxonomic category, which consists of one or more individuals of a populations that resemble one another more closely than individuals of other species.
- For example, *Mangifera indica* (mango), *Solanum tuberosum* (potato) and *Panthera leo* (lion).
- All the three names indica, tuberosum and leo represent the specific epithets while, the first words *Mangifera*, *Solanum* and *Panthera* are genera and represents another higher level of taxon or category.
- Each genus may have one or more than one specific epithets representing different organisms, but having morphological similarities. For example, *Panthera* has another specific epithet called *tigris* and *Solanum* includes species like *nigrum* and *melongena*.

(ii) Genus

- Genus comprises a group of related species, which has more characters common in comparison to species of other genera.
- In other words, genera are aggregates of closely related species.

Table : Some Genus and their species

Genus	Species
<i>Solanum</i>	Potato (<i>Solanum tuberosum</i>) and Brinjal (<i>S. melongena</i>)
<i>Panthera</i>	Lion (<i>Panthera leo</i>), Leopard (<i>P.pardus</i>) and Tiger (<i>P.tigris</i>)

(iii) Family

- Family is a group of related genera with less number of similarities as compared to genus and species.
- All the genera of a family have some common or correlated features. They are separable from genera of a related family by important differences in both vegetative and reproductive features.
- A plant family ends in a suffix -aeae and sub-family -oideae. While, an animal family has a suffix -idae and sub-family -inae.
- Among plants for example, three different genera *Solanum*, *Petunia* and *Datura* are placed in the family *Solanaceae*.
- Among animals for example, genus *Panthera*, comprising lion, tiger, leopard is put along with genus, *Felis* (cats) in the family *Felidae*.

(iv) Order

- An order is a group of one or more related families that possess some similar correlated characters, which are lesser in number as compared to a family or genera.
- Order being a higher category, is the 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 the order *Polymoniales* mainly based on the floral characters.
- The animal order, *Carnivora*, includes families like *Felidae* and *Canidae*.

Order	Animals and Families
Carnivora	Canidae (dog, wolf and fox), Felidae (cat, leopard, tiger and lion), Ursidae (bear) and Hyaenidae (hyaena)
Polymoniales	Solanaceae (potato and tomato), Convolvaceae (sweet potato and morning glory), Polymoniaceae (herbs, shrubs and small trees) and Hydrophyllaceae (water leaf).
Primates	Lemuridae (lemurs), Cebidae (new world monkeys), Pongidae (apes) and Hominidae (humans)

(v)

Class

- Class is a major category, which includes related orders.
- **Example :** order-Primata comprises monkey, gorilla and gibbon and is placed in class-Mammalia along with order-Carnivora that includes animals like tiger, cat and dog.
- Class-Mammalia has other orders also.

(vi)

Phylum or Division

- Phylum or Division is a taxonomic category higher than class and lower" in rank to kingdom.
- The term Phylum is used for animals, while division is commonly employed for plants.
- It consists of more than one class having some similar corelated characters.
- **For example, Phylum-** Chordata of animals contain following classes, Example : Pisces, Amphibians, Reptiles, Aves and Mammals.

(vii)

Kingdom

- It is known to be the highest category in taxonomy. This includes all the organisms, which share a set of distinguished characters. Example, all the animals belonging to various phyla are assigned the highest category called kingdom.
- Similarly, all the plants are kept in kingdom - Plantae.
- As we go higher from species to kingdom, the number of common characteristics goes on decreasing.
- Lower the taxa, more are the characteristics that the members within the taxon share.
- Higher the category, greater is the difficulty of determining the relationship to other taxa at the same level.
- The problem of classification becomes more complex.

Some organisms with their Taxonomic categories

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

DPP-2**Q.1** Order is placed between :

- (1) Kingdom and phyla
- (2) Kingdom and class
- (3) Class and family
- (4) Genus and species

Q.2 Which one of the following obligate category in taxonomic hierarchy will have maximum number of common characters?

- (1) Family
- (2) Class
- (3) Order
- (4) Species

Q.3 Which of the following pair is incorrectly matched?

- (1) *Mangifera indica* - Species
- (2) Hominidae - Family
- (3) Diptera - Class
- (4) Gymnospermae - Division

Q.4 The lowest and highest category of classification is (respectively)

- (1) Kingdom, species
- (2) Species, kingdom
- (3) Species, genus
- (4) Phylum, Division

Q.5 Which of the following have maximum common characters?

- (1) Felidae, Canidae
- (2) Potato, Brinjal
- (3) Carnivora, Primata
- (4) *Datura*, *Petunia*

Q.6 Potato and brinjal belong to the genus Solanum, which reflects that

- (1) They belong to single species
- (2) They are a group of related species
- (3) They both are morphologically and structurally similar to each other in all respects
- (4) They can always produce fertile hybrid

- Q.7** A group of related genera is called a
(1) family (2) class
(3) phylum (4) order
- Q.8** As we go from species to kingdom in a taxonomic hierarchy, the number of common characteristics
(1) will decrease
(2) will increase
(3) remain same
(4) may increase or decrease
- Q.9** In a taxonomic hierarchy, genus is interpolated between
(1) Kingdom and class
(2) Phylum and order
(3) Order and species
(4) Family and species
- Q.10** An order can be best defined as:-
(1) A group of related species and genera of different taxa
(2) A group of related families which exhibit a few similar characters
(3) A group of related classes which exhibit a few similarities
(4) An assemblage of genera related to different classes
- Q.11** Identify the incorrect statement:
(1) Class like Mammalia is involved in phylum Chordata
(2) Order like insecta is involved in class Muscidae
(3) Genus like Panthera is involved in family Felidae.
(4) Order like Primata is involved in class Mammalia

CLASS ASSIGNMENT

- Q.1** In which of the following organisms, reproduction is not synonymous with growth?
 (1) Bacteria (2) Unicellular algae
 (3) *Amoeba* (4) Housefly
- Q.2** A true regeneration was observed in
 (1) Hydra (2) Planaria
 (3) Sponges (4) Amoeba
- Q.3** Metabolic reactions occur in
 (1) Non-living objects only
 (2) Living beings as well as in cell free system
 (3) Living organisms only
 (4) *In vitro* conditions only
- Q.4** The process by which anything is grouped into convenient categories based on some easily observable characters is called as:-
 (1) Biodiversity
 (2) Classifications
 (3) Identification
 (4) Nomenclature
- Q.5** Described biodiversity range is
 (1) 1.7-1.8 million
 (2) 1.1-1.8 trillion
 (3) 1.7-1.8 billion
 (4) 17-18 billion
- Q.6** Which of the following groups consist of organisms which multiply by fragmentation?
 (1) Earthworm, Amoeba, fungi
 (2) Earthworm, fungi, bacteria
 (3) Fungi, filamentous algae, protonema of mosses
 (4) Amoeba, Hydra, bacteria
- Q.7** Which of the following statements regarding the response of living organisms to external stimuli is correct?
 (1) The external environmental stimuli can be physical, chemical or biological.
 (2) All organisms, from the prokaryotes to the most complex eukaryotes can sense and respond to environmental stimuli.
 (3) Consciousness and response to external stimuli is the defining property of living organisms.
 (4) All of these
- Q.8** Which of the following statement is **false**?
 (1) No non-living object exhibits metabolism
 (2) No non-living object shows reproduction
 (3) No non-living object shows growth
 (4) None is false, all are true statements.
- Q.9** Which of the following statements is not correct?
 (1) Biodiversity is the occurrence of variety of life forms differing in morphology, anatomy, habitats and habits.
 (2) Systematics is the branch of biology that deals with cataloging plants, animals and other organisms into categories that can be named, remembered, compared and studied.
 (3) Classification is the branch of biology that deals with principles and procedures of identification and nomenclature of organisms.
 (4) None of these
- Q.10** Read the following statements and select the correct option.
Statement I : The word systematics is derived from the Greek word 'systema'.
Statement II : Linnaeus used systema naturae as the title of his publication.
 (1) Both Statement-I and Statement-II are correct.
 (2) Statement-I is correct but Statement-II is incorrect.
 (3) Statement-I is incorrect but Statement-II is correct.
 (4) Both Statement-I and Statement-II are incorrect.
- Q.11** Which one of the following group of taxa does not represent similar category in hierarchy?
 (1) Potato, brinjal and tomato
 (2) Tiger, lion and leopard
 (3) Wheat, monocots and angiosperms
 (4) Wheat, rice and mango
- Q.12** The lowest common taxonomic category for wheat and mango is
 (1) Division (2) Class
 (3) Family (4) Order
- Q.13** A taxon is a
 (1) group of related species
 (2) group of related families
 (3) type of living organisms
 (4) taxonomic group of any ranking
- Q.14** Plant nomenclature means :-
 (1) To give names to plants without any rules
 (2) Nomenclature of plants under the international rules
 (3) Nomenclature of plants in local language
 (4) Nomenclature of plants in english language
- Q.15** Who wrote systema naturae ?
 (1) Linnaeus (2) Mayr
 (3) John Ray (4) De Candolle

Q.16 In the names *Mangifera indica*, *Solatum tuberosum* and *Panthera leo*, the words *indica*, *tuberosum* and *leo* represent

- (1) Generic name
- (2) Generic epithet
- (3) Name of species
- (4) Specific epithet

Q.17 ICBN codes for?

- (1) International code for Botanical Nomenclature
- (2) International code for Binomial Nomenclature
- (3) International code for Botanical Naming
- (4) International code for Binomial Naming.

Q.18 Scientific name of Mango plant is *Mangifera indica* Linn, in the above name Linn, refers to :-

- (1) Variety of Mango
- (2) A taxonomist who proposed the present nomenclature in honour of linnaeus
- (3) A scientist who for the first time described Mango plant
- (4) A scientist who changed the name proposed by Linnaeus and proposed present name

Q.19 Naming should not be done, before the proper characterization and identification because

- (1) There is a need to standardize the naming of living organisms such that a particular organisms is known by the same name all over the world.
- (2) Nomenclature is only possible when the organism is described correctly and we know to what organism, the name is attached to.
- (3) The vernacular names ensure that each organism have only one name.
- (4) All of these

Q.20 Why the determination of relationship becomes more complex in higher taxonomic categories ?

- (1) Number of common characters goes on decreasing in lower taxa
- (2) Number of common characters goes on decreasing in higher taxa
- (3) Because classification itself is very difficult process
- (4) Number of common characters goes on increasing in higher taxa

Q.21 Which category comes after phylum in descending order in taxonomic hierarchy?

- (1) Genus
- (2) Family
- (3) Class
- (4) Species

Q.22 Which statement is incorrect?

- (1) Each variety may have one or more than one specific epithets
- (2) Genera comprises a group of related species
- (3) Two species of the same genera has more characters in common in comparison to species of other genera
- (4) Potato and brinjal belong to different species

Q.23 Which of the following statements regarding the universal rules of biological nomenclature is incorrect?

- (1) Biological names are either derived from Latin language or are latinised.
- (2) The first word in a biological name represents the genus while the second component denotes the species.
- (3) Both the words in a biological name, when handwritten, are separately underlined, or printed in italics to indicate their Latin origin.
- (4) The specific epithet starts with a capital letter while the generic epithet starts with a small letter. It can be illustrated with the example of mangifera Indica.

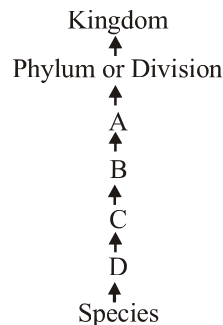
Q.24 In biological terminology, a group of similar organisms which are capable of interbreeding and producing fertile offsprings is called

- (1) species
- (2) genus
- (3) tribe
- (4) family

Q.25 A taxonomic category refers to

- (1) the basic unit of classification
- (2) a rank or level in a taxonomic hierarchy
- (3) a group of related organisms able to interbreed
- (4) a group of related organisms but unable to interbreed freely.

Q.26 Taxonomic hierarchy is given below, select the correct match -



	Taxonomic category	Examples
(1)	A	Sapindales, Insecta
(2)	B	Primata, Diptera
(3)	C	Musca, Poales
(4)	D	Triticum, Muscidae

- Q.27** Consider the following statements
 I. In binomial nomenclature, the name of an organism consists of two components.
 II. The first name of organism represents the specific name and the second name is generic name.
 Choose the correct option.
 (1) I is true, but II is false
 (2) Both I and II are false
 (3) I is false, but II is true
 (4) Both I and II are true
- Q.28** **Assertion :** Linnaeus binomial system of animal classification is essentially an artificial system, yet it has become a natural system.
Reason: Similarities forming the basis of Linnaeus system are indicative of genetic relationship.
 (1) If both assertion and reason are true and reason is the correct explanation of assertion.
 (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
 (3) If assertion is true but reason is false.
 (4) If assertion is false but reason is true.
- Q.29** **Assertion :** Both the words in a biological name when handwritten, are separately underlined or printed in italics.
Reason : This is done to indicate their latin origin.
 (1) If both assertion and reason are true and reason is the correct explanation of assertion.
 (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
 (3) If assertion is true but reason is false.
 (4) If assertion is false but reason is true.
- Q.30** Read the following statements and select the correct option.
Statement I : Genus comprises a group of related genera which has more characters in common in comparison to species of other genera.
Statement II : Family, has a group of related species with still less number of similarities as compared to genus.
 (1) Both Statement-I and Statement-II are correct.
 (2) Statement-I is correct but Statement-II is incorrect.
 (3) Statement-I is incorrect but Statement-II is correct.
 (4) Both Statement-I and Statement-II are incorrect.

HOME ASSIGNMENT

- Q.1** Mark the incorrect statement w.r.t. metabolism.
 (1) Microbes exhibit the metabolism
 (2) It is the property of all living forms
 (3) The metabolic reactions can be demonstrated in-vitro
 (4) It is not a defining feature of life forms
- Q.2** Which statement is false about the growth shown by non-living objects?
 (1) The growth occurs from outside
 (2) The growth is reversible
 (3) The growth is due to the accumulation of material on the surface
 (4) The growth is intrinsic
- Q.3** The twin characteristics of growth are:
 (1) Increase in number of individuals, increase in mass
 (2) Increase in height and increase in mass
 (3) Increase in molecular weight and increase in mass
 (4) Increase in size and decrease in mass
- Q.4** The basic smallest unit of classifications is
 (1) Genus (2) Species
 (3) Order (4) All of the above
- Q.5** Which of the following is a correct name ?
 (1) *Solanum tuberosum*
 (2) *Solanum Tuberosum*
 (3) *Solanum tuberosum Linn.*
 (4) All the above
- Q.6** Systematics deals with
 (1) Classification (2) Nomenclature
 (3) Identification (4) All of these
- Q.7** Phylogeny refers to
 (1) Natural classification
 (2) Evolutionary classification
 (3) Evolutionary history
 (4) Origin of algae
- Q.8** In taxonomy the first step is :-
 (1) Identification (2) Nomenclature
 (3) Classification (4) Affinities
- Q.9** Most of the botanical names are derived from the following language :-
 (1) German (2) Greek
 (3) Latin (4) Spanish
- Q.10** Evolutionary classification is called
 (1) Artificial system
 (2) Natural system
 (3) Phylogenetic system
 (4) None of the above
- Q.11** The number and types of organisms present on earth make
 (1) Taxonomy (2) Plant diversity
 (3) Animal diversity (4) Biodiversity

- Q.12** Biological names, when hand written, should necessary be:
 (1) Underlined (2) Bold (antics)
 (3) In capital letter (4) Italics
- Q.13** The term taxon refers to
 (1) Name of a species
 (2) Name of genus
 (3) Name of family
 (4) A taxonomic group of any rank
- Q.14** A division is formed by combining several
 (1) Orders (2) Families
 (3) Classes (4) Tribes
- Q.15** Fill in the blanks A and B.
 Kingdom → Phylum → [A] → Order → [B]
 (1) A - Genus; B - Species
 (2) A - Family; B - Class
 (3) A - Class; B - Family
 (4) A - Species; B - Division
- Q.16** Order primata and carnivora are placed in the same class, i.e.
 (1) Hominidae (2) Mammalia
 (3) Insecta (4) Chordata
- Q.17** Systematics takes accounts:
 (1) Evolutionary relationship between organisms.
 (2) Breeding relationship between organisms.
 (3) Economic relationship between organisms.
 (4) None of these
- Q.18** Species is considered:
 (1) As basic unit of classification
 (2) The largest unit of classification
 (3) Artificial concept of human mind which cannot be defined in absolute terms
 (4) Real unit of classification devised by taxonomists
- Q.19** Family of man (*Homo sapiens*) is:
 (1) Hominidae (2) Carnivora
 (3) Primata (4) Ceboideae
- Q.20** Order polymoniales based on
 (1) Reproductive character
 (2) Floral character
 (3) Evolutionary character
 (4) None of these
- Q.21** Which of the following is incorrect for reproduction?
 (1) Unicellular organisms reproduce by cell division
 (2) Reproduction is a characteristic of all living organisms
 (3) In unicellular organisms, reproduction and growth are linked together
 (4) Non-living objects are incapable of reproducing
- Q.22** Select correct statement for growth as one of the characteristic of living organisms.
 (1) Growth by increase in mass is a defining property of prokaryotic organisms only
 (2) Non-living objects do not show growth by increase in mass of body
 (3) Intrinsic growth is a characteristic of all living organisms
 (4) Growth can be extrinsic or intrinsic for multicellular organisms
- Q.23** For declaration of new species of higher plants what characters are mainly used
 (1) Floral character of new species
 (2) Anatomical characters of new species
 (3) Physiological character of new species
 (4) Character of endosperm
- Q.24** Which of the following statements regarding nomenclature is correct ?
 (1) Generic name always begins with capital letter whereas specific epithet with small letter
 (2) Scientific nomenclature should be printed in italics
 (3) Scientific nomenclature when typed or handwritten should be separately underlined
 (4) All the above
- Q.25** Arrange the following taxonomic categories in increasing number of common characteristics with respect to plant mango
 (A) Dicotyledonae (B) Polymoniales
 (C) Mangifera (D) Angiospermae
 (E) Anacardiaceae
 (1) D→A→B→E→C (2) C→E→A→D
 (3) D→A→E→C (4) D→A→C→E
- Q.26** Find out the correct statement:
 (1) All plants belonging to various phyla are assigned to the highest category called kingdom plantae
 (2) Higher the category, less is the difficulty of determining relationship to the other taxa at the same level
 (3) Wheat belongs to class Poaceae
 (4) As we go higher from species to kingdom, the number of common characters goes on decreasing
- Q.27** Genus represents aggregate of closely related species. Which of the following group of species does not belong to same genus?
 (1) Potato, Brinjal
 (2) Brinjal, Makoi
 (3) Lion, Leopard
 (4) Potato, Wheat

- Q.28** Select the correct sequence of taxonomic categories of Mango in ascending order
 (1) Mangifera → Anacardiaceae → Dicotyledonae → Sapindales → Angiospermae
 (2) Mangifera → Anacardiaceae → Sapindales → Dicotyledonae → Angiospermae
 (3) Angiospermae → Dicotyledonae → Sapindales → Anacardiaceae → Mangifera
 (4) Angiospermae → Sapindales → Anacardiaceae → Dicotyledonae → Mangifera
- Q.29** Which of the following is incorrect?
 (1) Category denotes rank.
 (2) Taxonomic groups or categories are distinct biological entities and not merely morphological aggregates.
 (3) All organisms, including those in the plant and animal kingdoms have species as the lowest category.
 (4) Taxonomic studies consider a group of individual organisms with fundamental similarities as a Genera.
- Q.30** In plants, cell division occurs whereas in animals, it occurs.....
 (1) only upto a certain age, continuously
 (2) continuously, only upto a certain age
 (3) continuously, continuously
 (4) only upto a certain age, only upto a certain age
- Q.31** The statement 'nothing lives forever, yet life continues' illustrates the role of
 (1) embryogenesis (2) morphogenesis
 (3) replication (4) reproduction.
- Q.32** Which of the following organisms do not reproduce?
 (1) Mules (2) Infertile human couples
 (3) Worker bees (4) All of these
- Q.33** Which of the following sets does not contain defining characteristics of living organisms?
 (1) Growth and reproduction
 (2) Metabolism and cellular level of organisation
 (3) Response to stimuli and consciousness
 (4) All of these
- Q.34** In the binomial system of taxonomy, developed during the 18th century by C. Linnaeus, the second word of an organism's biological name represents
 (1) species (2) genus
 (3) race (4) family.
- Q.35** Growth in organisms can be shown by :
 (1) Increase in protoplasm
 (2) Increase in mass
 (3) Increase in number
 (4) All of the above
- Q.36** Incorrect about growth :
 (1) Growth and reproduction are mutually exclusive events in higher plants and animals
 (2) In living organisms growth occurs from inside
 (3) Non-living substances may also show growth but from outside
 (4) None of these
- Q.37** In which organism reproduction can be considered as synonymous with growth ?
 (1) Amoeba (2) Planaria
 (3) Star fish (4) Two of the above.
- Q.38** Which of the following is not the characteristic feature of all forms of life ?
 (1) Reproduction (2) Growth
 (3) Mobility (4) None.
- Q.39** Unicellular organisms multiply by -
 (1) Cell differentiation (2) Cell growth
 (3) Cell division (4) Cell death.
- Q.40** A collection of species which bear a close resemblance to one another in the morphological characters of the floral parts is known as
 (1) family (2) variety
 (3) genus (4) division
- Q.41** Select the incorrect statement out of the following.
 (1) All animals belonging to various phyla are assigned to the Kingdom Animalia.
 (2) As we go higher from species to kingdom, number of common characteristics goes on increasing.
 (3) Different classes comprising fish, amphibians, reptiles, birds and mammals together constitute the Phylum Chordata.
 (4) Plant order Polymoniales includes the families like Solanaceae and Convolvulaceae based on the vegetative and floral characters.
- Q.42** All living organisms are linked to one another because
 (1) they have common genetic material of the same type
 (2) they share common genetic material but to varying degrees
 (3) all have common cellular organisation
 (4) all of the above
- Q.43** Match the following and choose the correct option.
 A. Family i. tuberosum
 B. Kingdom ii. Polymoniales
 C. Order iii. Solanum
 D. Species iv. Plantae
 E. Genus v. Solanaceae
 (1) i-D, ii-C, iii-E, iv-B, v-A
 (2) i-E, ii-D, iii-B, iv-A, v-C
 (3) i-D, ii-E, iii-B, iv-A, v-C
 (4) i-E, ii-C, iii-B, iv-A, v-D

Q.44 What is correct regarding binomial nomenclature ?
 (1) First name is specific epithet
 (2) Second name is of class
 (3) Developed by John Ray
 (4) None.

Q.45 What is incorrect about Carolus Linnaeus ?
 (1) He has given Binomial nomenclature system
 (2) He has given the term systematics
 (3) Systema naturae is the book written by him
 (4) None of these

Q.46 Rank / Taxon equivalent to phylum in plants is :
 (1) Subphylum (2) Breed
 (3) Variety (4) Division

Q.47 Identify the correct option regarding *Mangifera indica* (mango) :

	Family	Order	Class
(1)	Anacardiaceae	Sapindales	Dicotyledonae
(2)	Sapindales	Anacardiaceae	Dicotyledonae
(3)	Anacardiaceae	Sapindales	Monocotyledonae
(4)	Sapindales	Anacardiaceae	Monocotyledonae

Q.48 Identify the non-taxon rank -
 (1) Species (2) Phylum
 (3) Variety (4) Class.

Q.49 In taxonomic hierarchy, what is correct ?
 (1) Related genera are placed in same family
 (2) Smallest taxon is class
 (3) Largest taxon is phylum
 (4) Group of individual organisms with fundamental similarities are considered as genus.

Q.50 Family – order – class of *Musca domestica* (= Housefly) are respectively :
 (1) Muscidae – Insecta – Hymenoptera
 (2) Muscidae – Diptera – Mandibulata
 (3) Hymenoptera – Insecta – Mandibulata
 (4) Muscidae – Diptera – Insecta.

Q.51 Fill in the blanks :

Organism	Class	Order
Man	A	Primata
Housefly	Insecta	B

A and B are :

- (1) Chordata and Muscidae
- (2) Mammalia and Muscidae
- (3) Mammalia and Diptera
- (4) Vertebrata and Diptera.

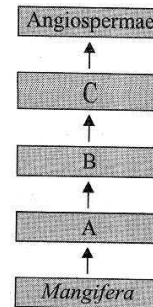
Q.52 Which is not correctly matched with its taxonomic rank?
 (1) Solanaceae Order
 (2) Homo Genus
 (3) Felidae Family
 (4) Mammalia Class

Q.53 Match column I with column II and select the correct option from the codes given below.

Column - I	Column - II
A. Filamentous algae	i. Fragmentation
B. Amoeba	ii. Binary fission
C. Hydra	iii. True regeneration
D. Flat worms	iv. Budding

- (1) A-i, B-ii, C-iv, D-iii (2) A-i, B-ii, C-iii, D-iv
- (3) A-ii, B-i, C-iv, D-iii (4) A-iii, B-i, C-ii, D-iv

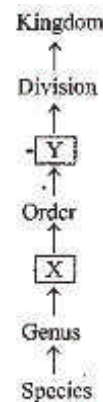
Q.54 Recognise the following flow diagram and find the correct options according to taxonomic hierarchy.



- (1) 'A' is comparable to muscidae while 'B' is at the same level as that of primata.
- (2) 'C' includes the angiosperms having two cotyledons in their seeds.
- (3) For wheat 'A' is poaceae, 'B' is poales and 'C' is monocotyledonae.
- (4) All of the above statements are correct.

Q.55 Observe the gradation of taxonomic categories and identify the missing categories according to the statement given below.

- I. X is a group of related species.
- II. Y is a group of related divisions.
- III. X is a group of related genera.
- IV. Y is a group of related kingdoms.
- V. Y is a group of related orders.



The correct options are

- (1) II and IV (2) I and II
- (3) I, II, IV and V (4) III and V

- Q.56** Two different genera are classified in the same taxonomic category, family. Which of the following statement is correct about their classification?
 (1) The same class but different species
 (2) A different class and different Order
 (3) The same phylum but different class
 (4) A different kingdom and different phylum
- Q.57** Study the four statements (A-D) given below and select the two correct ones out of them:
 (A) Definition of biological species was given by Ernst Mayr.
 (B) Photoperiod does not affect reproduction in plants.
 (C) Binomial nomenclature system was given by R.H. Whittaker.
 (D) In unicellular organisms, reproduction is synonymous with growth.
 The two correct statements are
 (1) A and D (2) A and B
 (3) B and C (4) C and D
- Q.58** Among the following statements, select the correct ones.
 A. In majority of higher plants and animals, growth and reproduction are mutually exclusive events.
 B. In non-living objects growth is by accumulation of material on the surface.
 C. The sum total of all the chemical reactions occurring in our body is called metabolism.
 D. Increase in mass and size are twin characteristics of growth.
 (1) B, C and D (2) A, B and C
 (3) A, D and C (4) A, B, C and D
- Q.59** Which of the following statements are correct regarding the response of living beings to any external stimuli?
 I. All organisms from most simple to the most complex, sense and respond to the external stimuli.
 II. The external stimuli can physical, chemical or a biological entity.
 III. Responding to an external stimulus is the characteristic feature of living beings.
 IV. Living organisms are self-replicating, evolving and self-regulating interactive systems capable of responding to external stimuli.
 (1) Only I (2) Only II
 (3) I and II (4) I, II, III and IV
- Q.60** Consider the following statements.
 I. Along with consciousness, growth and reproduction are the defining characteristics of living organisms.
 II. Reproduction is an all inclusive characteristics of living organisms.
 Select the correct option.
 (1) I is true, II is false (2) Both I and II are false
 (3) I is false, II is true (4) Both I and II are true
- Q.61** Select the correct statement from the following,
 I. Increase in mass and increase in number of individuals are twin characteristics of growth.
 II. Metabolic reactions can also be demonstrated outside live body in isolated cell-free systems.
 III. 'Response to stimuli' is a defining property of living organisms.
 (1) I and II
 (2) II and III
 (3) I and III
 (4) I, II and III
- Q.62** Identify the correct statement given below.
 (1) Cellular organisation of the body is the defining feature of non-living forms
 (2) Consciousness is the property shared by non-living organisms
 (3) A patient with dead brain has no self consciousness yet it is alive
 (4) Human beings are the only organism, who is aware of himself, i.e. self conscious
- Q.63** Select the correct statement from the following.
 (1) Mules can reproduce
 (2) Worker bee undergoes reproduction to generate new progeny
 (3) Mule and worker bees are both sterile
 (4) None of the above
- Q.64** Read the following statements.
 A. Isolated-metabolic reactions in-vitro are living things.
 B. Reproduction is synonymous with growth in *Chlamydomonas*.
 C. Reproduction is an all inclusive defining characteristic of living organisms.
 D. Extrinsic growth cannot be taken as defining property of living organisms.
 How many of the above statement (s) is/are not true?
 (1) One (2) Two
 (3) Three (4) Four
- Q.65** Which of the following taxonomic categories is being described by the given statements (i-iii)?
 (i) It is the basic unit of classification.
 (ii) It is defined as the group of individuals which resemble in their morphological and reproductive characters and interbreed among themselves and produce fertile offsprings.
 (iii) Human beings belong to the species sapiens which is grouped in the genus Homo.
 (1) Species (2) Genus
 (3) Order (4) Family

- Q.66** Read the following statements and identify the correct statements:
- Biodiversity refers to the number and types of organisms present on earth.
 - The local names would vary from place to place, even within a country.
 - The number of species that are known and described range between 1.7-1.8 million.
 - International Code for Botanical Nomenclature (ICBN) provides scientific names for plants
 - Nomenclature or naming is only possible when the organism is described correctly.
- (1) A and B only
 - (2) A, B and C only
 - (3) A, D and C only
 - (4) All of these

ASSERTION AND REASON

In the following questions, a statement of assertion is followed by a statement of reason, Mark the correct choice as :

- If both assertion and reason are true and reason is the correct explanation of assertion.
 - If both assertion and reason are true but reason is not the correct explanation of assertion.
 - If assertion is true but reason is false.
 - If assertion is false but reason is true.
- Q.67** **Assertion :** There are seven obligate categories in hierarchy of taxonomy.
Reason : Other categories of similar type can be called as intermediate categories.
- Q.68** **Assertion :** Death is considered as the regulatory process on earth.
Reason : It prevents an increase in population caused by continuous reproduction.
- Q.69** **Assertion :** Consciousness or response to stimuli is a defining property of living organism.
Reason : Human being is the only creature to possess self-consciousness.
- Q.70** **Assertion :** Metabolism is the sum total of anabolism and catabolism.
Reason : Diverse types of metabolic reactions occur simultaneously in a living organism.
- Q.71** **Assertion :** The living organisms are self-replicating, evolving and self-regulating interactive systems capable of responding to external stimuli.
Reason : Hierarchy of organisational complexity is shown at all levels.

- Q.72** **Assertion :** Taxonomic studies require correct classification and identification of organisms.

Reason : Taxonomic studies are useful in knowing our bioresources and their diversity.

STATEMENT BASED QUESTIONS

Read the following statements and select the correct option.

- Both Statement-I and Statement-II are correct.
 - Statement-I is correct but Statement-II is incorrect.
 - Statement-I is incorrect but Statement-II is correct.
 - Both Statement-I and Statement-II are incorrect.
- Q.73** **Statement I :** In planaria (flat worms), true regeneration occur.
Statement II : The fungi, the filamentous algae, the protonema of mosses, all easily multiply by budding.
- Q.74** **Statement I :** All plants, animals, fungi and microbes exhibit metabolism.
Statement II : The sum total of all the chemical reactions occurring in our body is metabolism.
- Q.75** **Statement I :** The scientific name of mango is written as mangifera Indica.
Statement II : In this name Mangifera represent the genus while indica is a specific epithet.

NEET PREVIOUS YEAR'S

- Q.1** Nomenclature is governed by certain universal rules. Which one of the following is contrary to the rules of nomenclature ? [NEET Phase-I 2016]
- The names are written in Latin and are italicised.
 - When written by hand the names are to be underlined
 - Biological names can be written in any language
 - The first word in a biological name represents the genus name and the second is a specific epithet.
- Q.2** Match column I with column II for housefly classification and select the correct option using the codes given below. [NEET II-2016]
- | Column I | Column II |
|------------|-----------------|
| (A) Family | (i) Diptera |
| (B) Order | (ii) Arthropoda |
| (C) Class | (iii) Muscidae |
| (D) Phylum | (iv) Insecta |
- (A)-(iii), (B)-(i), C-(iv), D-(ii)
 - (A)-(iii), (B)-(ii), C-(iv), D-(i)
 - (A)-(iv), (B)-(iii), C-(ii), D-(i)
 - (A)-(iv), (B)-(ii), C-(i), D-(iii)

Q.3 Select correctly written scientific name of Mango which was first described by Carolus Linnaeus:

[NEET-2019]

- (1) *Mangifera indica* Car. Linn.
- (2) *Mangifera indica* Linn.
- (3) *Mangifera indica*
- (4) *Mangifera Indica*

Q.4 In the taxonomic categories which hierarchical arrangement in ascending order is **correct** in case of animals?

[NEET-2022]

- (1) Kingdom, Class, Phylum, Family, Order, Genus, Species
- (2) Kingdom, Order, Class, Phylum, Family, Genus, Species
- (3) Kingdom, Order, Phylum, Class, Family, Genus, Species
- (4) Kingdom, Phylum, Class, Order, Family, Genus, Species

ANSWERKEY

DPP-1

Q.1 (1) Q.2 (2) Q.3 (3) Q.4 (1) Q.5 (3) Q.6 (4) Q.7 (3) Q.8 (3) Q.9 (1) Q.10 (4)
 Q.11 (2) Q.12 (2) Q.13 (4) Q.14 (4) Q.15 (2)

DPP-2

Q.1 (3) Q.2 (4) Q.3 (3) Q.4 (2) Q.5 (2) Q.6 (2) Q.7 (1) Q.8 (1) Q.9 (4) Q.10 (2)
 Q.11 (2)

CLASS ASSIGNMENT

Q.1 (4) Q.2 (2) Q.3 (3) Q.4 (2) Q.5 (1) Q.6 (3) Q.7 (4) Q.8 (3) Q.9 (3) Q.10 (3)
 Q.11 (3) Q.12 (1) Q.13 (4) Q.14 (2) Q.15 (1) Q.16 (4) Q.17 (1) Q.18 (3) Q.19 (2) Q.20 (2)
 Q.21 (3) Q.22 (1) Q.23 (4) Q.24 (1) Q.25 (2) Q.26 (2) Q.27 (1) Q.28 (3) Q.29 (1) Q.30 (4)

HOME ASSIGNMENT

Q.1 (4) Q.2 (4) Q.3 (1) Q.4 (2) Q.5 (3) Q.6 (4) Q.7 (3) Q.8 (1) Q.9 (3) Q.10 (3)
 Q.11 (4) Q.12 (1) Q.13 (4) Q.14 (3) Q.15 (3) Q.16 (2) Q.17 (1) Q.18 (1) Q.19 (1) Q.20 (2)
 Q.21 (2) Q.22 (3) Q.23 (1) Q.24 (4) Q.25 (3) Q.26 (4) Q.27 (4) Q.28 (2) Q.29 (4) Q.30 (2)
 Q.31 (4) Q.32 (4) Q.33 (1) Q.34 (1) Q.35 (4) Q.36 (4) Q.37 (1) Q.38 (3) Q.39 (3) Q.40 (3)
 Q.41 (2) Q.42 (4) Q.43 (1) Q.44 (4) Q.45 (2) Q.46 (4) Q.47 (1) Q.48 (3) Q.49 (1) Q.50 (4)
 Q.51 (3) Q.52 (1) Q.53 (1) Q.54 (4) Q.55 (4) Q.56 (1) Q.57 (1) Q.58 (2) Q.59 (4) Q.60 (2)
 Q.61 (4) Q.62 (4) Q.63 (3) Q.64 (2) Q.65 (1) Q.66 (4) Q.67 (2) Q.68 (1) Q.69 (2) Q.70 (2)
 Q.71 (2) Q.72 (2) Q.73 (2) Q.74 (1) Q.75 (3)

NEET PREVIOUS YEAR'S

Q.1 (3) Q.2 (1) Q.3 (2) Q.4 (4)