Important Questions for Class 11

Biology

Chapter 1- The Living World

Very Short Answer Questions **1 Mark**

1. Name the three fields of systematics.
Ans: The three fields of systematics are nomenclature, classification & taxonomy.

2. Give the two name systems of organisms?
Ans: Binomial Nomenclature is the two name systems of organisms.

3. Write the correct order of sequence of taxonomic categories?
Ans: The correct order of sequence of taxonomic categories is Species----> Genus----> Family----> Order----> Class----> Phylum----> Kingdom.

4. Give the unit of classification?
Ans: Rank or category is the unit of classification.

5. Who gave the binomial name of classification?
Ans: The binomial name of classification was given by Carolus Linnaeus..

6. What is meant by the identification of a species?
Ans: The identification of a species is aimed at finding the correct name and proper position of a species in an established scheme of classification.

7. Name the highest categories of classification?
Ans: The kingdom is the highest category of classification.

8. What are the three codes of nomenclatures?
Ans: The three codes of nomenclature are the International Code of botanical, zoological & bacteriological nomenclature.

9. What do you mean by "chemotaxonomy"?
Ans: Based on the distribution of certain characteristic chemical constituents, the understanding of taxonomic relationships is known as chemotaxonomy.

10. Define species
Ans: Species are members who can interbreed to produce fertile offspring.

11. What is systematic

Ans: The systematic arrangement also takes into account evolutionary relationships between organisms.

12. Give lbs names of two famous botanical gardens.

Ans: The names of two famous botanical gardens are Kew (England) and National Botanical Research Institute (Lucknow) or Indian Botanical Garden (Howrah).

Short Answer Questions **2 Marks**

1. What are the advantages of giving scientific names to organisms?

Ans: The advantages of giving scientific names to organisms are:

(i) Scientific names are universally accepted in the world because they are based on the same principles that are universal.

(ii) The advantage of a scientific name is in the term of relationship and comparison to the others.

2. Give the role of botanical gardens?

Ans: The role of botanical gardens are:

(i) Botanical gardens are helpful in providing plant materials for taxonomic studies.

(ii) Plant species are grown for identification.

(iii) Plants are grown for research.

(iv) To maintain records of local flora.

3. Differentiate between species & taxon?

Ans:

SPECIES	**TAXON**
It is the basic taxonomic category	It is a level of taxonomic category
It is a rank	It is a group that possesses concrete biological aspects.
It is monophyletic	It may be mono or polyphyletic.

4. Why are classification systems changing every now & then?

Ans: The organisms are classified on the basis of characteristics. Earlier the classification was based on the uses of various organisms but now humans are

interested more in knowing about different kinds of organisms present and also their diversities and their relationships too.

5. Differentiate between taxon and category?
Ans: The difference between taxon and category is as follows:

TAXON	**CATEGORY**
Taxon represents a group of organisms.	Category refers to a rank of the status of the taxon.
It is only of one eg. Dicots, Monocots,	Category is of two types i.e. a) Major rank – kingdom, division, class. b) minor rank – Genus & species

6. Describe the role of museums in studying systematically?
Ans: The role of museums in studying systematic is given below:
(i) Museums are having collections of plants & animals
(ii) Type specimens that are deposited in the museums.
(iii) Important centres for Museums are having collections of plants & animals studies.
(iv) The information includes both local flora and animals as well as information from other locations.

7. "Botanical gardens are living herbaria". Comment?
Ans: Botanical gardens are repositories of information useful for taxonomic studies. Herbaria are the most permanent records of plant specimens. Living plants are maintained in botanical gardens. They play key roles in conservation, research, ecology, library & herbaria etc.

8. Why are living organisms classified?
Ans: There are various kinds of life that differ in shape, size & colour etc. Biological diversity is the range of life occurring in the biological world. The diversity develops due to the evolution and development of adaptations to overcome competition among life forms due to limited resources.

9. What is the Taxonomic key? How is it helpful in the identification & classification of an organism?
Ans: Key is a taxonomic tool that uses similarities and differences to identify unfamiliar organisms. It is taxonomic literature based on couplets. These are

analytical in nature, and for the recognition of organisms, distinct keys are required for each taxonomic category, such as genus, order, family, and species.

10. Differentiate between taxonomy and systematic.
Ans: The differences between taxonomy and systematics are:

TAXONOMY	SYSTEMATICS
The science of identification, nomenclature and classification are called taxonomy.	It refers to the science of identification description, nomenclature and classification.
It deals with the rules and the principles of classification.	At every level of classification, it deals with unique traits.

11. What is a taxon? Illustrate the taxonomic hierarchy with a suitable example?
Ans: The taxon is "a unit of classification of organisms which can be recognized and assigned a definite category at any level of classification" eg. order primates and carnivores are included in mammals. Various classes eg. Pisces, animals, reptilia aves and Mammalia from phylum Chordata. All phyla are included in the kingdom Animalia.

12. What is the basis of modern taxonomic studies?
Ans: Taxonomic investigations are based on external and internal structure, cell structure, development process, and ecological information.

13. Why growth and reproduction cannot be taken as defining property of all living?
Ans: Because growth and reproduction are not defining properties of all living things, they cannot be considered defining properties of all living things.
• Non-living things can also Increase in mass by the accumulation of material on the surface.
• Many organisms do not reproduce (e.g, mules sterile worker bees)

14. How is taxon defined?
Ans: In a taxonomic hierarchy, each category represents a rank and is called a taxon.

Short Answer Questions **3 Marks**

1. Name the guidelines for the naming of organisms?
Ans: Guidelines for the naming of organisms include:-
(i) A scientific name generally has two words in Latin or is derived from Latin irrespective of its origin.
(ii) the First word denotes the genus whereas the second word for species.
(iii) To show the Latin origin, names are presented in italics or independently underlined.
(iv) There is only one right name for each taxonomic category.
(v) The name should be short, precise, and simple to say.
(vi) Homo sapiens is a generic name that starts with a capital letter and ends with a tiny letter.
After the species name, the author's name is put in shortened form and printed in Roman.

2. What is Biological classification? What is the need for classification?
Ans: Biological classification is the naming of organisms by two words. One is a generic name and the other is a specific name for eg.The designation of man as Home sapiens is necessary for the following reasons:-
(i) It's critical for the scientific study of living things. Different creatures would be in a state of disarray without this research.
(ii) It is impossible to study each and every organism.
(iii) All the types of organisms seem to occur in various localities.
(iv) Without a proper system of classification, it is impossible to recognize or identify different types of organisms.
(v) Classification aids in understanding the links between various animal and plant groups.
(vi) Classification makes the study of organisms easier and gives a comparative account of them.

3. State any five objectives of classification.
Ans: Five objectives of classification are:-
(i) The creation of a method for quickly recognising a species, whether it is known or unknown.
(ii) The description of various species.
(iii) Recognition of different species.
(iv) To distribute qualities at different levels of a hierarchy.
(v) The grouping of species in taxonomic classification.
(vi) On the grounds of organism resemblances, create a natural relationship board on phylogeny.

4. Explain the utility of systematic and mention the characteristics of new.

Ans: Systematics is defined as "the study of the classification of organisms based on evolutionary relationships".
(i) It provides useful information about organisms, their evolution and adaptation name and classification etc.
(ii) Systematics helps us in the identification of useful and harmful animals or plants in the applied field of biology.
(iii) It plays an economical role.
New systematics has the following features:-
(a) Species are regarded as dynamic units and not as static units of classical systematics.
(b) Because much of the work is done with species subgroups, the value of species as a whole is diminished.
(c) The morphological species definition has been replaced by a biological one that takes ecology, genetics, geography, cytology and behaviour into consideration.

5. What are the major divisions of classification, classify man.
Ans: The major divisions of classification are:
(i) Kingdom:- It is the highest category of classification. There are 2 kingdoms – Animal, the major divisions of the classification plant kingdom.
(ii) Phylum:- A group of closely related classes having certain common characters.
(iii) Class:- A group of closely related orders having certain common characters.
(iv) Order:- A group of closely related families having certain common characters.
(v) Family:- A group of closely related genera having certain common characters.
(vi) Genus:- A group of closely related species having certain common characters.
(vii) Species:- Individuals having certain common characters.
Classification of man:-
Kingdom- Animalia
Phylum- Chordata
Class- Mammalia
Order- Primates
Family- Hominidae
Genus- Homo
Species- Sapiens

6. What are taxonomic aids? Mention some of the taxonomic aids for identification
Ans: Taxonomic aids are devices used to study, Identification & classify organisms, some of these are:-

(i) Herbarium:- collections of present /preserved or mounted plant specimens. arranged systematically to provide information on sheets
(ii) Botanical gardens:- specialized gardens for collection of living plants, it is maintained for references and identification purposes in which each plant is labelled showing its biological name.
(iii) Zoological parks:- places with live animals are called zoos or zoological parks. The animals live in their natural habitat where there are separate places for birds, tigers, lions, reptiles etc.
(iv) Museums:- These are mostly set up in institutions where the collection of preserved plants and animals for reference and taxonomic studies are placed in preservatives eg. Alcohol and formalin.

7. How would you set up a herbarium?
Ans: Setting up a herbarium involves the following steps:-
(i) Visit a specific area to get intact parts or plant seeds or flowers.
(ii) Information on habitat, collecting season and time, geography, and so on.
(iii) Some instruments are required for collection, such as a notebook, digger, scissor, polyethene knife, newspaper, and so on.
(iv) Spreading of specimens and drying, changing the paper sheets after 3-4 days, plant press may be used for it. The dried specimens are stuck on herbarium sheets and pesticides like CS2, naphthalene Hgcl2, etc.
(v) Put a label on the specimen and mention its place of collection, time of collection, common name, scientific name etc.

8. Differentiate between classical taxonomy and Modern taxonomy.
Ans:

CLASSICAL TAXONOMY	**MODERN TAXONOMY**
It is termed as old taxonomy or systematic	It is called Neo- systematic or Biosystematic.
The species was regarded as a fundamental, concrete, and distinct unit, a fixed or static thing, and the creation of a creator.	The species is thought to be interconnected, malleable, and a work in progress, as well as dynamic and ever-changing.
In it, the classification was done on basis of morphological features only	The creatures were classified based on their evolutionary relationships.
Few individuals were studied.	A large number of individuals are studied.

The species was delimited on morphological characters.	Emphasis on population instead of species. Biological delimitation has taken the role of morphological delimitation.

9. What is the difference between a Botanical Garden and a Herbarium?
Ans: The difference between Botanical Garden and Herbarium is that the Botanical Garden is the Collection of living plants. Whereas the herbarium is the Collection of dried, pressed and preserved plant specimens on a sheet.

10. Keys are analytical in nature and are helpful in the identification and classification of organisms. How?
Ans: Keys are used for identification and classification of different plants and animals on the basis of similarities and differences in characters. These are used to distinguish between classes, orders, families, genera, and species.

11.Define
(a) Genus
Ans: Genus is a group of related species.

(b) Family
Ans: The family group of related genera.

(c) Order
Ans: The order is a group of real families.

12 .What is the Binomial system of nomenclature? Who proposed this system? Why is binomial nomenclature the most acceptable mode of naming organisms?
Ans: The naming of plants and animals with two words one generic and another specific name is called the binomial system of nomenclature. This scientific system for naming species was created by Carolus Linnaeus. He provided a species two names, such as The generic name is mangifere, and the specific name is indica.
Because it is written according to international nomenclature rules defined by the ICBN, ICZN, and ICNPC, among others, binomial nomenclature is universally acknowledged all over the world. It is divided into two parts: generic and specialised names, preceded by the abbreviated name of the scientist who discovered it. It has to be Latin or Latin-derived.

It must be binomial. The genus starts with capital letters while species by small letters. Handwritten name is underlined; it indicates relationship with other species present in the same genus.

Before a taxonomist names a newly discovered organism, the norms and restrictions of binomial nomenclature must be followed. This preserves taxonomic stability and eliminates the usage of names that could lead to misunderstanding, ambiguity, and confusion.