Chapter - 1 The Living World

Question-1

Comment upon the statement "scope of Biology is large"

Solution:

Biology provides us a very large field of study. It provides us a better understanding of ourselves. It tells us about our body parts, their functions and how we can keep our body fit. The study of Biology tells us about the causes, effects and treatment of diseases. Biology helps us to meet our needs by utilizing natural resources available to us. Many problems like malaria eradication, insect control and other diseases are controlled by the collaboration of people from other disciplines like chemists, druggists, doctors, etc. Biology makes us understand the relationships of natural and man made ecosystems. Biology tells us the importance of various aspects of natural resources and the need to conserve them. Keeping in mind all these factors, we can confidently state that the scope of Biology is indeed large.

Question-2

Who devised Binomial system of nomenclature?

Solution:

Linnaeus devised a system of classification of plants and animals known as 'Binominal Nomenclature'. According to him, the scientific name of a species consists of two parts; the first part represents the genus to which the species belongs while the second part represents the identity of the species to which the individual belongs. E.g. humans are called *Homo sapiens*. Pea plants are named *Pisum sativum*. The binomial names are written in italics.

Question-3

Mention three main biological generalizations of great significance.

Solution:

The three main generalizations of great significance are

(i) Cell Theory proposed by Schleiden and Schwann.

(ii) Theory of Natural Selection that explains the mechanism of evolution, proposed by Charles Darwin.

(iii) The Theory of Genes in Modern Biology.

Question-4

Give the contribution of Louis Pasteur in Biology.

Solution:

Louis Pasteur was a French scientist. He disproved the concept of spontaneous origin of life. He proved that fermentation is caused by living organisms like yeast and bacteria. He formulated the Germ Theory of diseases. He discovered a vaccine against anthrax, which is caused by the bacterium Bacillus anthraces in cattle.

Question-5

What are fossils?

Solution:

Fossils are the remains of a past life that died as a race. Their body parts got preserved in rocks. Fossils are defined as remains or traces of some part of the anatomy of once-living things that are older than our recent geological experience. Once-living things, refers to organisms large and small, simple and complex, from the plant and animal kingdoms.

Fossils are a record of the evolution of life through geologic time. Paleontology, the study of fossils, has been invaluable in reconstructing prehistoric environments, identifying animals and plants living millions of years ago, and tracing the evolution of living things.

Question-6

What is heparin?

Solution:

Heparin is an anticoagulant.

Question-7

Give the contribution of Cuvier in the field of Biology.

Solution:

George Leopold Cuvier (1769-1832) was a French paleontologist. He first rejected the traditional great chain of being as a unifying concept of evolution. He was the first to identify the fossils of extinct bird-like reptiles. He laid the foundation for paleontology. Paleontology is the study of fossils. It is a branch of Biology. George L. Cuvier also made major contributions in comparative anatomy.

Question-8

Define phytogeography?

Solution:

The study of the distribution pattern of plants in the world is called phytogeography.

Question-9

What does neonatology deal with?

Solution:

Neonatology deals with the study of new born babies upto the age of 2 months.

Question-10

What is the observation of Antony Von Leeuwenhock?

Solution:

Antony Von Leeuwenhock observed different types of cells like bacteria, euglena, sperm, egg and blood corpuscles of invertebrate. He invented the simple microscope.

Question-11

Define nomenclature.

Solution:

The system of providing organism with appropriate and distinct name is called nomenclature

Question-12

What is classification?

Solution:

Classification is the arrangement of organisms in groups on the basis of their relationship.

Question-13

What is biochemical systematics?

Solution:

The classification of plants and animals on the basis of biochemical characterisitics is called biochemical systematics.

Question-14

Define taxonomy.

Solution:

It is the Science of classification

Question-15

What are taxonomic keys?

Solution:

A taxonomic key is of organisms" [INCOMPLETE]

Question-16

What is a lead?

Solution:

Each statement in A KEY IS CALLED LEAD.

Question-17

Distinguish between Taxon and Genus.

Solution:

Taxon :-

(i)Taxon is grouping of organisms which are similar and genetically related

(ii) It is a classified unit of any rank or taxonomic category of any rank-example : all tigers form the species taxon-panthera.

Genus :-

(i) A group of dissimlar species is called genus

(ii) It is a group of species which are closely related. A genus may be monotypic having only one species example:_ Homo

Question-18

Differentiate between species and taxon.

Solution:

Species:-

(i) It is the basic taxonomic category

(ii) It is a rank

(iii) It is monophyletic Genus

Taxon:-

(i) It is a level of taxonomic category

(ii) It is a group of concrete biological aspects

(iii) It may be mono or polyphyletic

Question-19

Explain the utility of systematics.

Solution:

Systematics is defined as" the study of classification of organisms based on evolutionary relationship".

The Utility of Systematics:-

(i) it provides useful information about the organism, its evolution and adaptation , name and classification etc.,

(ii) Systematics help us in the identification of useful and harmful animals or plants in the applied field of biology.

(iii) It plays an economical role.

Question-20

Give the role of botanical gardens.

Solution:

Role of botanical gardens:-

(i) They provide plant materials for taxonomic studies

(ii) Plant species are grown for identification and research

(iii) to maintain the record of the local flora

Question-21

Mention any two aims of zoological parks.

Solution:

(i) To develop interest and awareness about wild animals in public.

(ii) The zoos are involved in the conservation of many endangered species of wildlife. To conserve the wildlife, special attention is being given to the protection of natural habitats and ecosystems and the captive breeding of wild animals.

(iii) Zoological parks are the prized assets & sources for tourists attraction (visited by children & common people).

Question-22

Botanical gardens are living herbaria. Comment.

Solution:

Botanical gardens are repostories of information useful for taxonomic studies .Herbaris are permanent records of plant specimens. Botanical gardens are used for taxonomic studies .Living plants are maintained in botanical gardens e.g NBRI, Lucknow,Indian Botanical Gardens Kolkataq (has central natural herbarium). .These play key roles in conservation, research, ecology, library&herbaria etc.

Question-23

Give an account of museums.

Solution:

Mostly set in educational institutes like schools and colleges for storing ,preservation and exhibition of objects of natural history. The museum has a collection of plants as well as the animals for study and reference also.