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Notes for Class 9<sup>th</sup>

# Biology

Chapter 3

NAME: \_\_\_\_\_

F.NAME: \_\_\_\_\_

CLASS: \_\_\_\_\_ SECTION: \_\_\_\_\_





## CHAPTER NO 3. Biodiversity

**Q (1): What is biodiversity? Write its importance.**

**Ans: Biodiversity: -**

**Meaning: -**

The term biodiversity has been derived from two Greek words.

- **Bio** mean life.
- **Diversity** mean variety within a species or among a species.

**Definition: -**

The different kind of organisms such as plants, animals and microorganisms present in different ecosystems of the world is called biodiversity.

**Explanation: -**

There are two million organisms which have been identified. Out of these two million 1.5 million are animals and 0.5 million are plants. In Pakistan there are about 60000 kinds of plants and 23,000 types of animals.

Biologist estimated that today's global biodiversity may consist of more than 100 million kinds of organisms. The biodiversity of an area depends on climate, altitude and composition of soils etc. Tropical regions of the earth have richer biodiversity while Polar Regions have fewer species.

**Importance of biodiversity: -**

**i. Food for human beings:**

Biodiversity provides food for human in the form of different crops, fruits, meat, eggs and milk etc.

**ii. Production of drugs:**

Biodiversity plays a vital role in human and animal's health. A wide variety of plants, animals and fungi are used as medicine and essential vitamins. Drugs such as streptomycin and Erythromycin are derived from fungi drugs like caffeine, morphine and quinine are produced by other plants.

**iii. Industrial benefits of biodiversity:**

Biodiversity plays an important role in the production of industrial materials. Building materials, fibres, dyes, resins, gums, rubber and oil are some of the industrial materials derived from the plants.

**iv Relation with ecosystem;**

Biodiversity play an important role in making and maintaining ecosystem. It is directly involved in recycling of nutrients and providing fertile soil.



**Q (2): - Define classification? Explain the aims and principles of classification. Keeping in view its historical background?**

**Ans: - Classification:**

The arrangement of organisms into group and sub group on the basis of their similarities and differences is called classification.

Biologist have identified or described about 2 million kinds of organism (0.5 million type of plants & 1.5 million of animals)

**Basis of Classification:**

i. Aristotle classified organisms on the basis of habitat. For example, fish and turtle cannot be placed in one group.

ii. classification is also based on relationship among organisms and such relationship is got through similarities in characteristics. These similarities suggest that all organisms are related to one another at same point in their evolutionary histories.

iii. Later biologists begun to classify organism on the basis of physical characteristics. Some of the characteristics which are used to classify organisms are as follows.

- Prokaryotic or eukaryotic cell
- Unicellular or multicellular organism
- Autotrophs or Heterotrophs

iv. Modern system of classification is based not only on morphology of organism but the similarities and differences in the DNA of the two organisms can be used for getting idea about their structure and function.

**Aims of classification: -**

- i. To determine the similarities and difference among organisms.
- ii. It makes easier to study the number of species.
- iii. To find interrelationship among organisms.
- iv. To name and place the organism in a proper place.
- v. to study an organism systematically.

**Principles of Classification: -**

Biologist follows certain principles for classification. A few of the principles are:

- i. Organisms are classified on the basis of their apparent similarities such as colour, height, and weight etc.
- ii. On the basis of internal structure and stages of development.
- iii. When they have more homologous structure.
- iv. Evolutionary history is also considered during classification.
- v. Genetics and Biochemistry of different organism are also considered as principle for classification.

**Q. (3): What is Hierarchy of taxonomy? Discuss various categories of hierarchy.**

**Ans: Hierarchy of taxonomy: -**

The arrangement of different organisms in their respective group called taxa. The taxa form a ladder called taxonomic hierarchy.

**Various categories: -**

All organisms are divided into five kingdoms. So, kingdom is the largest taxon. On the basis of similarities, each kingdom is further divided into smaller taxa in the following way.

**i) Species: -**

A specie consists of similar interbreeding organism.

**Example:** Pardus.

**ii) Genus: -**

A genus is a group of related species.

**Example:** Panthera

**iii) Family: -**

A family is a group of related genera.

**Example:** Felidae

**iv) Order: -**

An order is a group of related families.

**Example:** Carnivora

**v) Class: -**

A group of similar order makes up a class.

**Example:** Mammalia

**vi) Phylum: -**

It is a group of related classes.

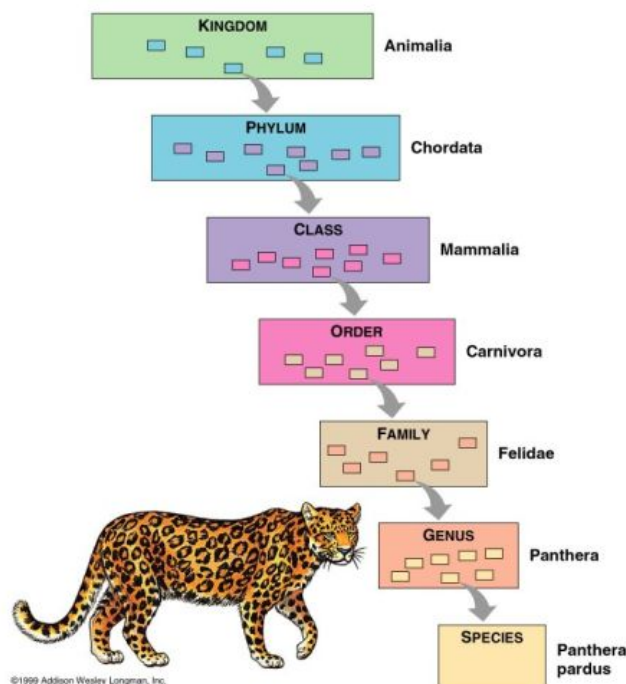
**Example:** Chordata

**vii) Kingdom: -**

The related phyla group together to form kingdom.

**Example:** Animalia

Each category is called taxon. Members of the lower taxon resemble one another more than the members of a higher taxon.





**Q (4): Write the taxonomic hierarchy of Amoeba, Mustard, Mushroom, man and panther?**

**Ans: Taxonomic hierarchy:**

The arrangement of different organisms in their respective group called taxa. The taxa form a ladder called taxonomic hierarchy.

Taxa	Amoeba	Mustard	Mushrooms	Man	Panther
Kingdom	Protista	Plantae	Fungi	Animalia	Animalia
Phylum	Protozoa	Tracheophyte	Mycota	Chordate	Chordate
Class	Sarcodina	Angiospermae	Basidiomycota	Mammalian	Mammalian
Order	Ameobidale	Brassicales	Agaricales	Primates	Carnivora
Family	Amoebidae	Brassicaceae	Agaricaceae	Hominidae	Felidae
Genus	Amoeba	Brassica	Agaricus	Homo	Panther
Species	Amoeba Proteus	Brassica campestris	Agaricus campestris	Homo sapiens	Panther pardus

**Q (5): Discuss the old history of classification?**

**Ans: - History of Classification:**

**i) Aristotle Classification:**

Aristotle was a Greek philosopher and scientist in 4<sup>th</sup> BC. He classified plants and animals on the basis of similarities.

**a. Plant Classification:** Aristotle classified plants into

**i) Herb ii) Shrubs iii) Trees**

**b. Animal Classification:** Aristotle classified animals into

**i) Aquatic animals ii) Terrestrial animals.**

**ii) Abu Usman Umer Al-jahiz:**

**Date of Birth:** He was born in Basra in 776 A.D.

**Contribution:** He described the life system of ants and his own observation on seasonal migration of fishes in river Tigris.

**Book:**

Al-Jahiz wrote a book Kitab-Al-Hayawan on animals which described the characteristics of 350 species of animals. In this book he also discusses animal mimicry, communication, physiology, degree of intelligence and their geographical region etc.

**Q(6): Discuss two kingdom system of classification? Write the reason of its failure.**

**Ans: - Historical background: -**

The two-kingdom system of classification was presented by a Swiss scientist Carolus Linnaeus in 1753. According to two kingdom system of classification all living organisms are classified into:

i) Kingdom Plantae

ii) Kingdom Animalia

**i) Kingdom Plantae: -**

Kingdom Plantae included all green plants, algae, fungi and bacteria.

**ii) Kingdom Animalia: -**

Kingdom animalia included all unicellular and multicellular Animals.

**Failure / Limitations:**

i. Dual organisms are placed in kingdom plantae such as euglena and Chlamydomonas. Both these have plants as well as animals like characteristics.

ii. This system did not clear the difference between prokaryotes and eukaryotes.

iii. Fungi were place in kingdom plantae but new discoveries also proved that fungi are very different from plants.

On the basis of these limitations five kingdom system of classification was proposed.

**Q (7): Discuss five kingdom system of classification.**

**Ans: -** According to "Five Kingdom system of classification" all living organisms are classified into five kingdoms. In 1969 Robert Whittaker introduced this system. These five kingdoms are,

**I) Kingdom Monera: -**

**Characteristics: -**

i. They contain prokaryotic organisms.

ii. All these organisms are unicellular and microscopic.

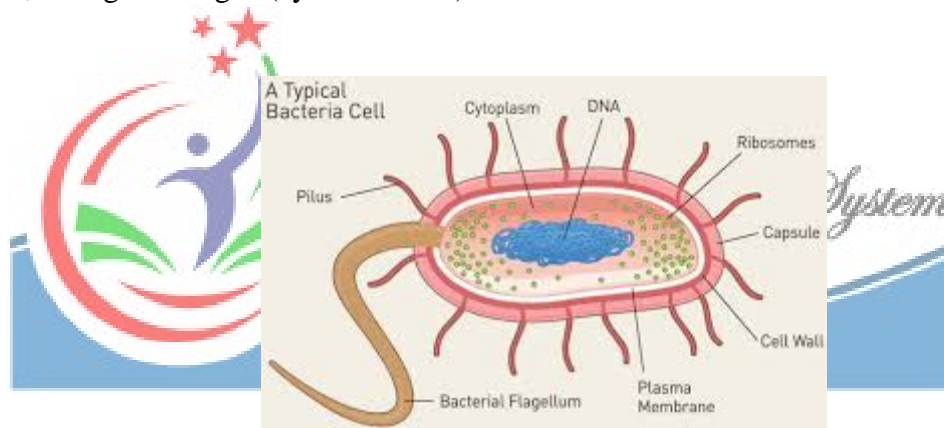
iii. Nuclear membrane and membrane bounded organelles are also absent.

iv. Their Cell Wall is made up of murein (sugar + amino acid also called peptide glycan)

v. They are simplest of all living organisms.

**Examples: -**

Bacteria, blue green Algae (cyanobacteria).



**II) Kingdom Protista (Gr; Protista-very first): -**

**Characteristics: -**

i. It includes eukaryotic unicellular and simple multicellular organisms.

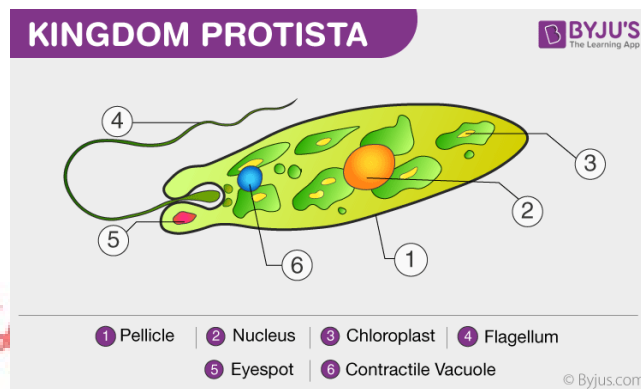
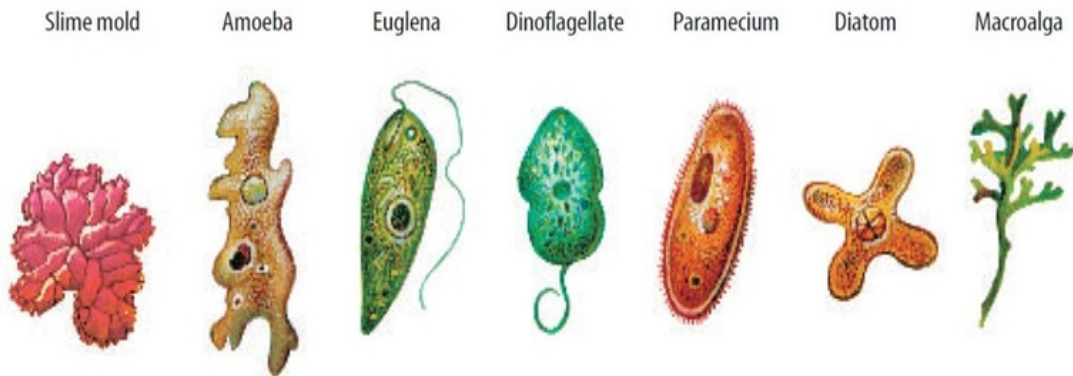
ii. Usually live in aquatic habitat.

iii. Some contain chlorophyll and prepare their own food while some lack chlorophyll and cannot prepare their own food.

iv. Some organisms are plant like, some are animal like and some are fungus like.

**Examples: -**

- |             |        |               |
|-------------|--------|---------------|
| Plant like  | —————> | Chlamydomonas |
| Fungus like | —————> | Slime molds.  |
| Animal Like | —————> | Amoeba etc.   |

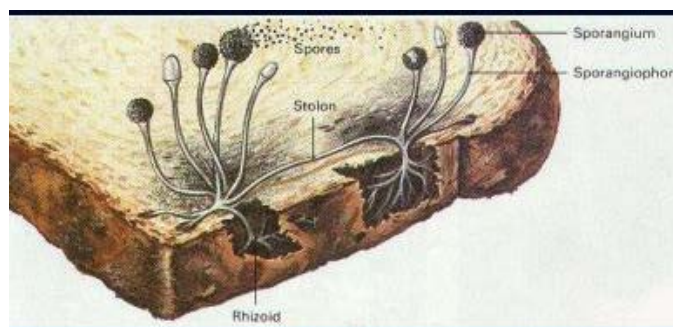


**III) Kingdom Fungi: -**  
**Characteristics: -**

- i. They are eukaryotic multicellular organisms.
- ii. They are heterotrophs because they cannot synthesize their own food.
- iii. The food is stored inside the body in the form of glycogen.
- iv. Their cell wall is made from chitin.
- v. They take their food by absorption (saprophyte).

**Example: -**

Bread mold, Mushroom, puffballs and yeast etc.



**IV) Kingdom Plantae: -**

**Characteristics: -**

- i. They include eukaryotic multicellular organisms.
- ii. They are autotrophic and can prepare their own food by the process of photosynthesis.
- iii. Their cell wall is made of cellulose.
- iv. Mostly lack centrioles inside their cells.
- v. The reserve food is in the form of starch.

**IV) Kingdom Animalia: -**

**Characteristics: -**

- i. They include eukaryotic multicellular animals.



- ii. Centrioles are present in the cells.
- iii. They have no chlorophyll and cannot prepare their own food.
- iv. This kingdom contains both vertebrates and invertebrate animals.

**Example: -**

**Vertebrates:** They have back bone e.g. Fish, birds, mammals etc.

**Invertebrates: -** They have no back bone e.g. insect, Ant, Jellyfish, worm etc.

**Q (8): Discuss the comparison between two kingdom and five kingdom system of classification?**

S/No	Two Kingdom System	Five Kingdom System
1	It was proposed by Carolus Linnaeus in 1751.	It was proposed by Robert Whittaker in 1969.
2	Organisms are classified into two kingdoms.	Organisms are classified into five kingdoms.
3	It is based on nutrition and motility.	It is based on the cell structure, complexity of body, mode of nutrition and evolution.
4	The Placement of organisms like Euglena, Bacteria, Fungi in plantae is questionable due to certain reasons.	Organisms are better placed on the basis of body, cell structure and evolution.

**Q (9); Write a distinguishing characteristic of the five kingdoms of living organisms?**

Ans: Distinguishing Characteristics of the five Kingdoms of life:

Kingdom	Cell Type	Nuclear Envelope	Cell wall	Mode of Nutrition	Multicellularity
<b>Monera</b>	Prokaryotic	Absent	Non-Cellulose	Autotrophic or heterotrophic	Absent
<b>Protista</b>	Eukaryotic	Present	Present in some forms, various types	Photosynthetic or heterotrophic, or combination	Absent in most form
<b>Fungi</b>	Eukaryotic	Present	Chitin	Absorption	Present in all forms
<b>Plantae</b>	Eukaryotic	Present	Cellulose and other Polysaccharides	Photosynthesis	Present in all forms
<b>Animalia</b>	Eukaryotic	Present	Absent	Ingestion	Present in all forms



**Q (10) What is Virus? Discuss their structure?**

**Ans: - Virus: -**

**Discovery: -**

It was first discovered by a Russian scientist Ivanovskiy in 1892.

**Meaning: -**

The word virus is derived from Latin word "venom" which means poisonous fluid.

**Definition: -**

Viruses are non-cellular unique particles at the borderline of living and non-living organism.

Study of virus is called virology.

**Structure of Virus: -**

The virus consists of two main parts.

- i) Outer protein coat called capsid.
- ii) The inner nucleic acid core contains DNA or RNA.

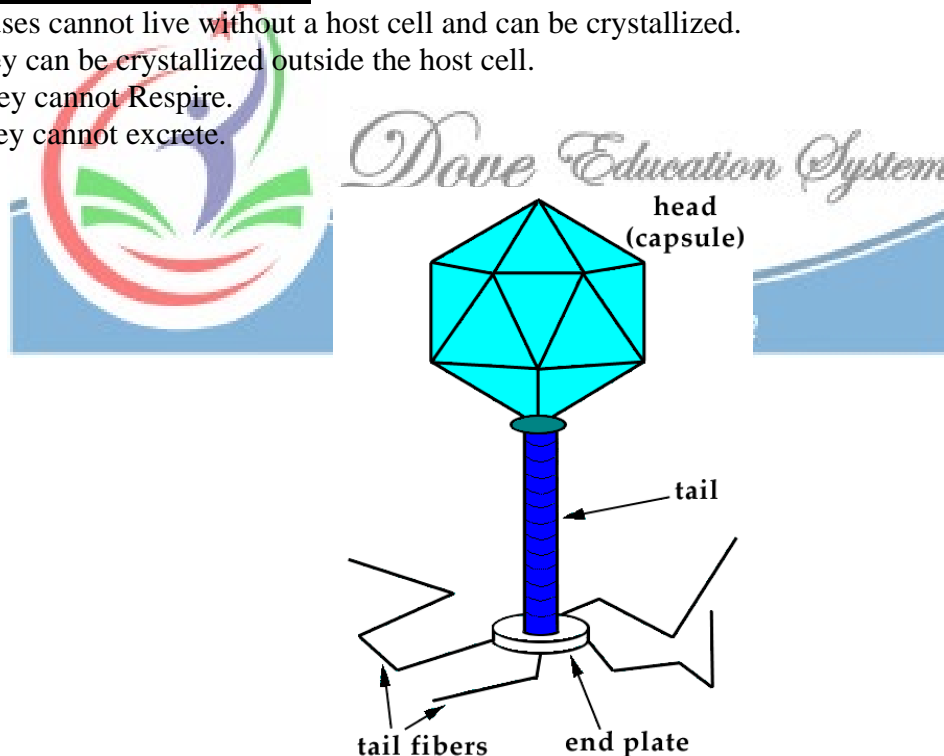
**Difference between living and non-living characters:**

**Living characteristics:**

- i. They can reproduce inside the host cell (obligate parasite)
- ii. They contain nucleic acid either DNA or RNA as hereditary materials.
- iii. They can grow inside the host cell.
- iv. They cause diseases in living organisms.

**Non-Living characteristics: -**

- i. Viruses cannot live without a host cell and can be crystallized.
- ii. They can be crystallized outside the host cell.
- iii. They cannot Respire.
- iv. They cannot excrete.



**Q (11): Explain binomial nomenclature and its rules? Discuss its importance.**

**Ans: - Meaning: -**

- Bi means two,
- Nominal means names.

So, binomial nomenclature is the method of giving scientific names to living organisms.

**Introduction: -**

It was developed by a Swedish biologist Carolus Linnaeus in 1757. According to binomial nomenclature all living organisms have a particular name consisting of two words. The first name refers to the Genus and the second name refers to the species. That is why this system is known as a two-word naming system.



**Examples: -**

HomoSapiens is the zoological name of man. In this name home is the genus and Sapiens is the specie.

**Importance of binomial nomenclature: -**

- i. These names are more definite and precise than common names. Common name has no scientific basis.
- ii. Being generally in Latin, they have a universal acceptance by people of all languages.
- iii. They are usually descriptive and easier to study.
- iv. They indicate the generic and evolutionary relationships of individual animals and plants.

**Rules of Binomial nomenclatures: -**

- i. Scientific names are usually printed in italic when hand written they are underlined.
- ii. The first term generic and evolutionary relationships or individual animals and plants.

**Rules of Binomial nomenclature: -**

- i. Scientific names are usually printed in italic when hand written they are underlined.
- ii. The first term generic name always begins with capital letter, while the species name is never capitalized.
- iii. The species name is written after genus name.

**Examples: -**

Mustard	Brassica campestris
Frog	Rana tigrina

**Q (12): List down the biological names of some plants and animals.**

**Ans: - Biological Names: -**



**Botanical names of some plants: -**

Local Name	English Name	Botanical Name
Nilofar	Blue Water lily	Nymphaea lotus
Tambaku	Tobacco	Nicotianatabacum
Dharek	Neem	Melia azedarach
Surajmukhi	Sun Flower	Helianthus annuus
Lehsan	Garlic	Allium Sativum
PhoolMatar	Sweet pea	Lathyrusodoratus
Shersham	Mustard	Brassica campestris
Ruber	Rubber	Ficuselastica
Pepal	Sacred Fig	Ficusreligiosa
Banyan	Banyan	Ficusbenghalensis

**Zoological Names:**

Local Name	English Name	Zoological Name
Makhi	House Fly	Muscadomestica
Zarapha	Girraffe	Giroffacamelopardolis
Kharpusht	Porcupine	Hystixlecura
Bille	Cat	Felisdomesticus
Titlee	Butterfly	Pierisrapae
Kechwa	Earth worm	Pheretimaposthuma
Kutta	Dogs	Canisfamiliaris
Markhor	Markhor	Capra flaconeri
Talor	Talor	Houbara bustard
Lomri	Wolf	Canis lupus
Babar sher	Lion	Felisleo
Bengal Sher	Tiger	Felistigris

**Q (13): What do you know about conservation of biodiversity? Why conservation of biodiversity is important?**

**Ans: Conservation of Biodiversity: -**

**Definition: -**

The use of natural resources such as plants, animals, minerals and water in a wise manner is called conservation of biodiversity.

**Explanation: -**

Nature has gifted us with natural resources. We need to make wise use of these resources so that their balanced state will not be disrupted.

**Importance:**

Conservation of resources is necessary to fulfil the needs for the present generation, as well as for the future generation.

**Q (14): What do you meant by extinct, threatened and endangered species? Write example with references to Pakistan.**

**Ans: Extinct species:**

A Specie that no longer lives in an ecosystem is said to be extinct in that ecosystem.

**Extinct Animals in Pakistan:**

Asiatic cheetah, tiger, lion, wild ass, Indian one horn rhinoceros, swamp deer, black buck and Hangul etc.

**Endangered species:**



A specie that is at risk of extinction in near future is called endangered species. In Pakistan 31 species of mammals, 20 species of birds and 5 species of reptiles are endangered.

**Endangered Species of Plants:**

Rafflesia, yaw, chilghozae and sanobar.

**Endangered species of animals:**

Houbara bustard(talor), Capra falconeri (markhor)

**Threatened species:**

A species which are likely to become endangered in the near future are called threatened species.

**Threatened species of animals:**

Fishing cat, pallas cat, otter, Snow leopard, Brown bear.

**Q (15): Write the impact of human being on biodiversity?**

**Ans: Negative Impact of Human being on Biodiversity:**

**i. Habitat loss and Deforestation:**

Habitat loss means destruction of natural habitat of species.

All Species have specific food and habitat. Human Population increase day by day in order to fulfil the demands of food, people are clearing forests and developing agriculture lands and residential colonies.

Deforestation mean cutting down of trees without proper planning is called deforestation.

In Pakistan forests cover only 5.2% of the land. Pakistan has the highest annual deforestation rate in Asia. According to a report of WWF since 1947 more than 151,500 acres of forest land have been converted to non-forest land.

**ii. Over – Hunting:**

Illegal hunting of animals causes loss biodiversity. In Pakistan various lizards, snakes, crocodiles and larger mammals are hunted for various purposes. Large number of migratory birds are hunted and killed during their seasonal migration.

**iii. Introduction or Removal of species:**

When a new specie is introduced in an ecosystem. It may prove harmful for the existence of their species living there.

**a) Introduction of species:**

Eucalyptus trees were imported to Pakistan from Australia. These trees consume more water and have disturbed the level of underground water. So other smaller plants cannot grow near these trees.

**b) Removal of species:**

Starfish eats mussels which are harmful to many other species. If starfish is removed from that ecosystem, the mussels will increase in number and they will harm to other species.

**iv. Rapid industrialization:**

The Chemical pollutants released from industries are harmful for species and ecosystem.

**Q (16): Define wild life. Describe the conservation of wildlife.**

**Ans: -Wild Life: -**

**Definition: -**

The non-domesticated animals and non-cultivated plants present naturally in an area is called wild life.

**Conservation of wild life: -**

We should conserve our wild life by controlling the following dangerous issues.

- i. Over population
- ii. Deforestation
- iii. Over grazing
- iv. Urbanization etc.

**Q (17): List down the endangered species of Pakistan? And what are the reasons behind their population decrease?**

**Ans: Endangered Species: -**

**Definition: -**

The species which are near to extinct is called endangered species.

**Endangered species in Pakistan: -**

In Pakistan there are:

Mammals	=	31 Species
Birds	=	20 Species
Reptiles	=	5 Species

**Examples: -**

**Some endangered plants species in Pakistan:**

Taxusbaccata	(yew)
Pinusgeradiana	(chilghoza)
Juniperus	macropoda (sanobar)

The above plants species have become endangered in Pakistan.

**Some engendered animal species in Pakistan**

- Capra falconeri (markhor)
- Houbarabustard (talor)
- Marcopolo Sheep
- Musk deer
- Dolphin

**Reason of population decrease:**

- Habitat loss and deforestation
- Introduction of new species.
- Over-hunting
- Pollution
- Climate change

**Q (18): Define deforestation? Discuss its causes and effects.**

**Deforestation: -**

**Definition: -**

The cutting down of trees from land without proper planning is called deforestation.

**Causes of deforestation: -**

- Extension of cities requires more land, thus forest is cut to build roads and houses etc.
- Over population need more land for agricultural activities thus forest is cut down.
- Trees are also removed to develop pastures for grazing.
- Wood is used both as timber and as fuel wood.
- Timber mafia cut the trees for easy cash.

**Effects of deforestation: -**

- Deforestation leads to soil erosion.
- Destruction of wild life habitat.
- Flooding:** With rain falls soil drain off into the rivers, which causes flooding.
- Desertification:** - Formation of deserts.
- Reduce source of rain:** Deforestation decrease transpiration. This ultimately reduce source of rains.

**Q (19): Write the importance of forests?**

**Ans: - Importance of Forests:**

- Forests are the source of timber and fuel wood.

- ii. Forest are the natural factories for the production of oxygen.
- iii. Forest control flood and prevent formation of desert.
- iv. Forest provide habitat to wildlife.
- v. Forest also enhances the aesthetic value of ecosystem and a site for tourist attraction.
- vi. Forest keeps the air clean by extracting carbon dioxide from air.
- vii. It provide habitat for some important animals and other organisms.

**Q (20): Explain the conservation issue in Pakistan.**

**Ans:** - Pakistan is facing many problems related to conservation of natural resources. Deforestation and hunting are most common issues.

- Due to deforestation many valuable species of plants have been lost.
- Similarly, due to hunting many animals like Houbara bustard (Talor), Marcopolo sheep, ibex (Wild goat), partridge, and falcons become endangered species.
- The dynamitic explosion and electro fishing have reduced many fish species like shermahi, mahasher.
- Musk deer are killed for glands which are used for making perfumes.
- The most serious threat faced by Indus river dolphin is the release of heavily polluted water into the sea, which is causing the blindness of these dolphin.

**Major Steps for conservation of biodiversity:**

Following are a few examples of the steps taken in Pakistan to conserve biodiversity.

**I. Conservation of biodiversity of Suleiman range:**

Suleiman range chilgoza forest is the largest chilgoza forest in the world. In 1992 the WWF-P started its conservation program.

**II. Northern areas conservation project:**

The northern areas of Pakistan serve as a habitat for a number of wildlife species. The survival of these species is under threat. The NACP is a project of WWF-P which is successful in implementing a ban on the hunting of these species.

**III. Conservation of migratory birds in Chitral, NWFP**

Chitral lies on the migratory route of several important birds' species. The birds face enormous pressure. WWf-Pakistan initiated efforts to reduce the hunting pressure in 1992. The efforts proved successful.

**IV. Conservation of ChiltanMarkhor:**

Hazarganji national park is located close to Quetta and is the only remaining habitat of chiltanMarkhor in the country. WWF-Pakistan developed the management plan of the park.

**V. Bear baiting in Pakistan:**

Bear baiting is an old game in the subcontinent that came with the Britishers. WWF-Pakistan has been successful in imposing a ban on this illegal practice. The government of Pakistan played an active role in putting and ends to this cruel sport.

**VI. Himalayan wildlife project to check the hunting of brown bears.**

**VII Indus Dolphin Project to save Indus Dolphin**

**VIII. Protected areas management Project in Machiara in Azad Jammu Kashmir.**

**IX. Marine Turtle conservation Project.**

**X. Bane on the hunting of Markhor and Urail in Baluchistan.**

**XI. Himalayan Jungle Project to protect the biodiversity in Himalayan region.**

**Importance of biodiversity: -**

- It provides us medicinal plants.
- It gives us food.
- It is a source of Recreation.
- It saves endangered species.
- It saves our land from soil erosion.



### SHORT QUESTION

#### B. Write Short answer of the following Question?

##### Q1. How Deforestation lead to desertification?

**Ans: Deforestation:**

Deforestation is the removal of forest and trees in unwise manner is called deforestation.

**Desertification:**

The formation of desert is called desertification.

**Formation of Desert:**

Desert form after deforestation with deforestation the rain fall reduces which convert the green area of ecosystem to desert. Desertification occurs due to deforestation. Due to deforestation the rain fall reduces which convert the green area of the environment to the desert.

##### Q2. Why is it important for a biologist to understand biological classification?

**Ans: Importance of biological classification for a biologist:**

- i. To know about the origin of organisms.
- ii. Classification helps biologist to study organism easily.
- iii. To determine similarities and difference among living organisms.
- iv. It also helps biologist to give an idea about the sequence of evolution among organism.

##### Q3: What is the status of viruses in classification?

**Ans:** A virus having both living and non-living properties and are present in the borderline between living and non-living that is why there is no place for virus in five kingdom system of classification.

**Difference between living and nonliving characters:**

**Living Characteristics:**

- i. They can reproduce inside the host cell(obligate parasite).
- ii. They contain nucleic acid either DNA or RNA as hereditary materials.
- iii. They can grow inside the host cell.
- iv. They cause diseases in living organisms.

**Non- Living characteristics:**

- i. Viruses cannot live without a host cell and can be crystallized.
- ii. They can be crystallized outside the host cell.
- iii. They cannot Respire.
- iv. They cannot excrete.

##### Q4: How you can differentiate between kingdom Monera and Protista?

**Ans: Difference between Kingdom Monera and Protista:**

Properties	Kingdom Monera	Kingdom Protista
Cell type	Prokaryotic	Eukaryotic
Nuclear envelop	Absent	Present
Cell wall	Made of murein	Various type
Membrane bounded organelle	Absent	Present



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**Q5. List down the endangered species of Pakistan? And what are the reasons behind their population decrease?**

**Ans:** See Q No. 17





### LONG QUESTION

**C: Give detailed answer of the following Question.**

**Qi. Differentiate between two kingdom system and five kingdom system along their advantages and disadvantages:**

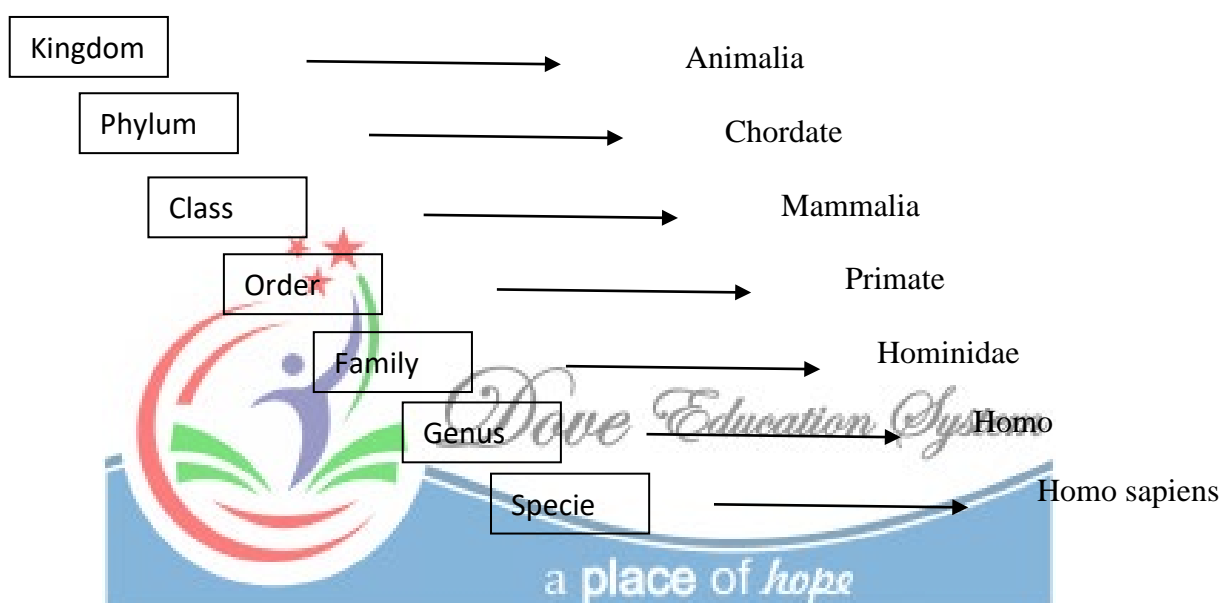
**Ans:** See QNo. 8

**Q ii. Take an organism and assign it to different ranks according to hierarchy of taxonomy?**

**Ans:** The group into which organism are classified are known as taxonomic categories or taxa (Kingdom "taxon") and these taxa form a ladder, called taxonomy hierarchy.

**For example:**

The taxonomic hierarchy of humans is shown below.



**Qiii. How human activities effect the biodiversity of an area?**

**Ans:** See Q No. 15

**Qiv. Explain Binomial Nomenclature? What are its advantages?**

**Ans:** Terminology:-

- Bi Means two
- Nominal means names

Nomenclature: Means naming System.

Introduction:-

It was developed by a Swedish biologist Carolus Linnaeus in 1757. According to binomial nomenclature all living organisms have a particular name consist of two words. The first names consist of two words. The first name refers to the species. That is why this system is known as two words naming system or binomial nomenclature.

Example:-

Homo sapiens is the zoological name of man. In this name homo is the genus and sapiens is the species.

Advantages:

a) Specify:

Each organism is given a specific name. No two organisms are given similar name.



**b) Universal acceptance: -**

Being generally in Latin they have universal acceptance by people of all languages.

**c) Generic relationship:**

It indicates generic relationship and descent of individual animals and plants.

**d) Easy to understand:**

Binomial nomenclature is adopted by all taxonomists because it is easy to understand.

**Q5. What are the reasons for the extinction of biodiversity worldwide? What measures are required to conserve the biodiversity of Pakistan?**

Ans: **Extinction:**

The loss of species forever is called extinction.

**Reason for extinction:**

**i. Over population:**

Human population is increasing day by day. This causes more pressure on our natural environment.

**ii Hunting:**

Humans kill endangered wild animals. And gradually these animals become extinct from our natural environment.

**iii. Deforestation:**

The unwise cutting of trees from the environment is called deforestation.

**iv. Climate change.**

Climate conditions are changing rapidly so the species which cannot adapt to the new climatic condition can die.

**v. Pollution:**

Pollution also causes the extinction of biodiversity.

**Measures:**

- Strict rules should be applied by the government to protect endangered species.
- Killing of endangered species of animals should be banned.
- The habitat should be improved.
- Wildlife parks, game sanctuaries and zoos should be established.
- Afforestation and re-forestation are required.