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Q) Write short notes on any TWO of the following [20]
a) Biodiversity loss
b) Population Explosion
c) Deforestation.

a) 1) Introduction : What is Biodiversity:

Biodiversity refers to the variety of living organisms found in a particular ecosystem, region or entire planet. It encompasses the diversity of species, genetic variation within species, and the variety of ecosystems and ecological processes that support life. The convention of Biodiversity, defines biodiversity in the following words:

" The variability among living organisms, from all sources including inter alia terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part ...."

2) Classification of Biodiversity:

Biodiversity is classified in three categories which are as follows:

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2.1) Species Biodiversity:

This refers to the variety of living species or organisms existing in marine, terrestrial and aquatic sources. It includes a full range of species from microorganisms to giants and variety of plants.

Example:

It includes viruses, bacterias, multicellular plants and even fungi.

2.2) Genetic Biodiversity:

It refers to variability of genes available in single species. It includes the genetic variations within species, both among geographically seperated population and among individuals within a single population.

2.3) Ecological Biodiversity:

It encompasses variety of

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ecosystems on earth. It studies variation in the biological communities in which species exist.

Example:

deserts, lakes, Ponds, forests, etc.

3) Loss of Biodiversity and its causes:

3.1) Loss of Biodiversity:

Biodiversity is diminished by a number of factors, including both natural changes and human disruptions. The loss of even a single species is considered a tragedy as it is a irreplaceable substance of genetic material. This ultimately can alter the food chains which can disrupt the ecosystem and ~~unbed~~ upset the balance of nature.

3.2) Major Threats to Biodiversity:

Following are the major threats to

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biodiversity:

3.2.1) Habitat loss:

Human encroachments can have a dive impact on biodiversity. When humans' involvement in wild areas increase, it can result is destruction of natural habitat for wild animals.

3.2.2) Over hunting:

Over hunting is another major threat to biodiversity. When humans inautiously hunt animals, without giving heed to the possible reprecussions, it can bring many species on the verge of extinction.

3.2.3) Invasive species:

Invasion of non-indegenous species could upset the balance of an ecosystem. When non-native species migrate to another ecosystem, they can bring the native species on the verge of being extinct.

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3.2.4) Pollution:

Pollution can pose a major threat to Biodiversity. It can affect an ecosystem in sundry ~~mmm~~ ways. Contamination of water can kill marine life. On the other hand, contamination of soil can also impact plants and, mostly, herbivores.

3.3) Causes of loss of Biodiversity:

3.3.1) Deforestation:

extensive and reckless cutting of trees can plague the biodiversity of an area. The indiscriminate cutting of trees can erase may ecosystems, leaving ~~inhabited~~ massive loss of live amogst the inhabitants.

3.3.2) Careless use of Pesticides:

Pesticides might provide the crops with some protections, but in a broader spectrum, it has a detrimental role

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The pesticides can also, along with the insects that harm crops, kill many insects that have a beneficial impact such as bees, butterflies.

3.3.3) Poor Disposal of Sewage:

Sewage contains high level of nutrients such as nitrogen etc. when this enters water bodies, it can lead to excessive enrichment of nutrients, which ultimately leads to eutrophications, resulting is massive loss of life.

3.3.4) Heavy Machinery:

Machinery, particularly heavy equipment, can inadvertently harm wildlife through collisions, entanglements during operations. This, as a corollary, can impact the biodiversity.

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b) 1) Introduction: What is Deforestation:

Conversion of forested areas into non-forest areas is deforestation. It is the result of removal of trees, over large area, without sufficient reforestation. In other words, deforestation refers to the loss of forest cover. The Food and Agriculture Organisation of the UN. (FAO) defines deforestation in the following words:

"Change of forest with depletion of tree crown cover more than 90%"

2) Causes of Deforestation:

The causes of deforestation are classified in two categories which are as follows:

2.1) Anthropogenic causes:

2.1.1) Agriculture:

In order to create space for Agriculture and livestock grazing, forests are cleared through the process of slash-and-Burn or by directly cutting down the

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trees. This clearing of forests for agriculture leads to deforestation.

2.1.2) Urban Sprawl:

Urban sprawl can cause deforestation through the expansion of cities and urban areas into previously undeveloped or forested lands. As cities grow and expand they often encroach nearby forests and natural habitats.

Example:

A quintessential example of this is the expansion of the city of Lahore. The city initially contained many natural habitats at its periphery, including water bodies. However, as the city expended, the natural habitats were encroached and eventually destroyed.

2.1.3) Mining Expeditions:

Mining can lead to deforestation in several ways. Before mining operations can commence, forests

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and vegetation ~~are~~ need to be cleared in the mining area. Furthermore, Mining operations can disturb the soil in the area, making it susceptible to erosion, leading to increased runoff and sedimentation in nearby water bodies.

2.1.4) Petroleum Exploration:

During Seismic surveys, which are conducted to locate oil and gas reserves beneath the surface, heavy machineries are employed to clear vegetation and trees to create access for equipment. The removal of trees and vegetation leads to deforestation.

2.2) Natural Causes:

2.2.1) Tsunami:

Tsunamis can cause massive ~~##~~ inundation which stretches to nearby coastal areas, mangroves and other vegetation, annihilating everything in its path.

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2.2.2) Forest Fires:

Forest Fives lead to deforestation through their destructive effects on large areas of forested land. They burn down trees and vegetation alike, causing massive destruction on a large-scale area.

2.2.3) Desertification:

Desertification includes degradation of soil in arid and semi-arid regions. This process can extend to nearby vegtation of forest areas, prompting a loss in plant cover and deforestation

2.3) Consequences:

Deforestation can cause dive implications on an area. It can lead to soil degvation and erosion. It can impact the climate of the particular area, exposing the area to harsh weathers. It can desult in destruction of natural & habitat an loss in bio diversity.