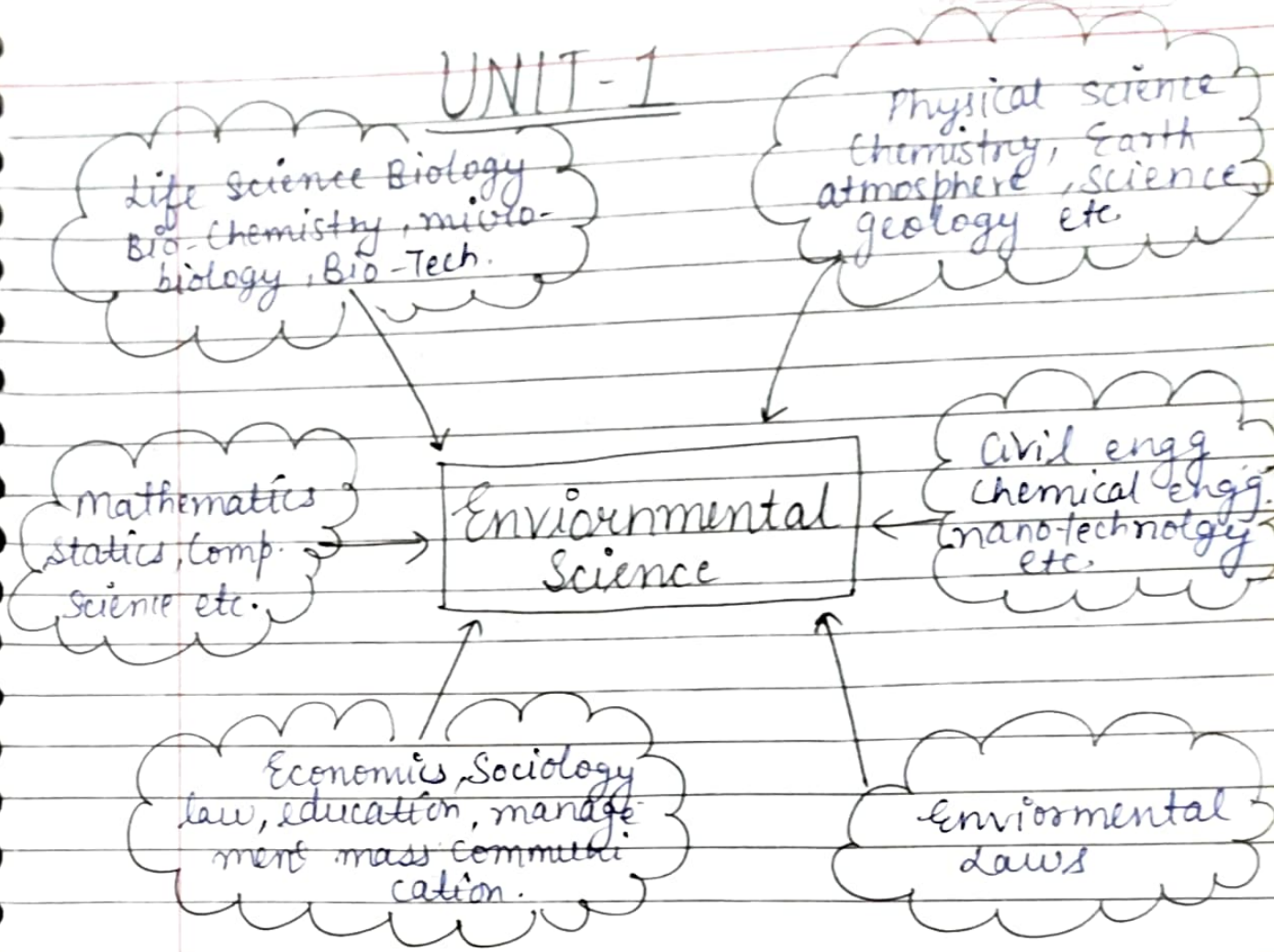
UNIT-1



Enviornment :→ means our surroundings. it is defined as sum of all external conditional & influences affecting organism

Biotic :→ living components of environment with influence the ~~biotic component~~.

Abiotic :→ It include non-living organsims.

Life Science :→ It include Botony, Zology, microbiology, genetics & bio diversity in understanding biotic components & interaction.

* for Understanding physical & chemical structure of a biotic components of abiotic along with mass & energy transfer we have to use of basic component of physics, chemistry, Zology atmosphere science, geography.

* Mathematics, statics & Computer Science source effective tool in enviornment modify subject likes Economics, management, sociology persue me input for dealing with social economics accept associated with various development activities.

* Technology provide technical solution to enviornment for control & waste treatment that are extremly important for protection of enviornment.

Enviornmental Laws :→

Provide the guidelines & legal measure for effective management & protection of enviorment education & mass communication are two subject that are instruction in this semetary the enviornment.

Physical science :→
Understanding Physical & chemical structure of enviornment.

Scope of EVS :→
Since enviornment studies have been seen to be

multi-displinary in nature it is considered to be a subject of great scare & include large number of areas & ascepts.

Cheif among them are :→

* Natural resources
* Ecology & Bio diversity.
* Enviormental solution & control
* Social issues in relation to development
* Human population & enviornment.

* EVS incooperate with in its severeal activities for one protection of enviornment.

* It create job opportunity for enviornment scientist, engineer, teacher, advocate enviormental journalist.

There is a need for human in following department / organisation / fields.

1.) Industries fertilizers plants, rufinary textile mills & mines.

2.) Social development recharge & development forest & weildlife management & wildlife Urban planing water resource & agriculture.

3.) Public institution & private infitution college university of enviornment, forest.

means media, green advocacy for implimentation of environmental law.

Some of independent organisation :→

1. Inter-government plan on climate change (IGCC)
2. United Nation environment project (UNEP)
3. Earth Sience government project.

Maintaining & carrying capacity :→

Every ecosystem chase its resources that are survival & development environment & ecosystem have got abilities to recover loss of its resources by regenerating them over one period of time that are temporary & not exceeding the threshold damage limit. If the carrying capacity of environment crossed enviornmental degradation starts, so we need to assure that unregulated consumption of resources must be check & our action are not damaging the environment to an extent cannot recover the lost.

Enviornmental accept assessment :→

sustainable development require that for any activity that bring about economic grown the corresponding environment impact must be check & our action are not damaging the environment to an extend that it can't recover the lost.

Environment accept assessment :→

Sustainable development require that for any activity that brings about Economic growth the corresponding enviornment impact must be studied carefully by experts & negative address for enviornmental impact of major project that is large does minority etc must be mroughly study as such project cause tremendous enviorh-ment change. That is deforestation of native people.

UNIT-2

Ecosystem :→ The structural & functional communities & their enviornment is called ecosystem or ecological system.

An ecosystem is a basic fuctional unit in any ecological study where their is continou production & exchange of material b/w plants, animals & enviornment. This process is called cycling of material for example energy came from sun autotrophs & plants in an ecosystem are capable of taking solar energy & converting it in chemical energy. This store in chemical energy is than passed on to the other organism during this process some energy is less out.

Types :-

Natural Ecosystem :→
These ecosystem operate by themselves in nature without any human interferenc. It divided into two categories.

Terristial Ecosystem :→
example :- forest, grassland, desert.

aquactic Ecosystem :→
example :- river, streams, lakes, marines ecosystem like ocean & sea.

Artificial Ecosystem :→
These ecosystem are metioned artificially by man for example crops field.

Structure of Ecosystem :→

1.) Abiotic :→ The physical environment like water soil, light, temp etc. The physical environment need only influence the biotic structure but also fuctional unit of ecosystem. It represent degree of integeration b/w population of various organisms in the environment.

2.) Biotic :→ These include all living organisms present in environment for ex. plants, bacteria animal etc. The biotic factor mainly classified into four groups :

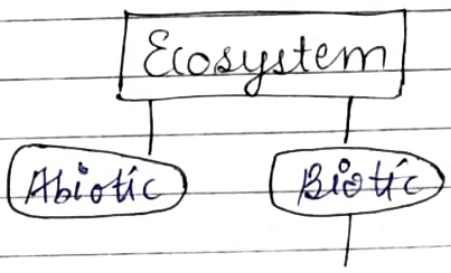
1) Producers
2) Consumers
3) Omnivorous
4) Decomposers

* Producers :→ The organism carry photosynthesis constituent depends on abiotic factor of ecosystem. The producer depends on abiotic factor for more energy production. A portion of energy synthesis is used by producer for their growth & survival & remaining is store for future use.

* Consumer :→ are organisms which eat omnivores organisms
Types :- Primary, Secondary, Tertiary.

* Omnivorous :→ in addition to herbivorous & carnivorous in an ecosystem. they consume both producer & consumes for example human.

* Decomposer :→ are organisms that break down dead bodies of plants & animal at their waste product. They include fungus & certain bacteria.



Producer | Consumer | omnivorus | Decomposer

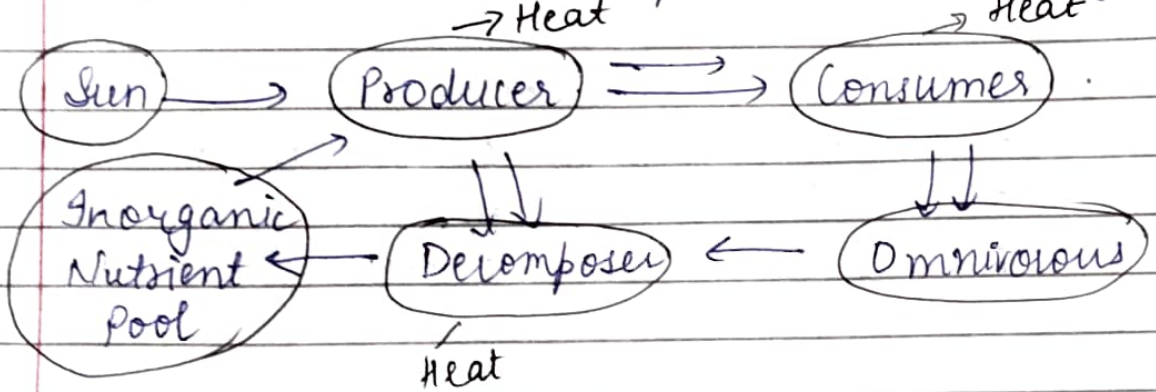
Primary | Secondary | Tertiary

fuction of an Ecosystem

1) Pertains to the exchange & interaction between living & non-living components in an ecosystem. There are two process proceeding simultaneously.

2) Energy flow producer recieve energy from the sun & pass it on through various biotic components from food chain.

3) Biochemical Cycle :-
Beside energy various nutrients & water are also required for various life process. these are exchange by biotic components not only among themself but also with their abiotic component within ecosystem.



The energy flow is in a single direction & is non-cyclic where as biochemical flow

is cyclic fuction of an ecosystem cyclic nutrient flow cyclic element flow shown by light arrow & non cyclic energy flow through by dast arrow.

Food Chain :→

Grass → Goat → Wolf

In an ecosystem their is always transfer of food & energy across various tropic & food levels.
The transfer of food & hence energy from one trophic level to next is called food chain.

Two types of food Chain :-

1.) Grazing food chain
2.) Detritus food Chain.

Grazing food :→

It starts from green plant which is also producer then goes to plants later which are herbivorous & than goes to carnivorous. Such food chain require sunlight for their continuity.

Now in this most common types of food Chain are.
1.) Terstial ecosystem.
2.) aquatic ecosystem.

aquatic Ecosystem :→
Phytophenktons → Zooptnanokions → Insect
→ Fish.

Detritus food chain
It starts from that organic matters like leaf litter decaying, root etc from there it passes is detrivorous which feed on dead- organic matter & than to those organisms which feed on detrivorus this food chain don't depend directly to sunlight but on the supply of that organic matter.

Dead leaves → Detrivorous → Crabs →
Small fish → big fishes.

Energy flow on Ecosystem :→

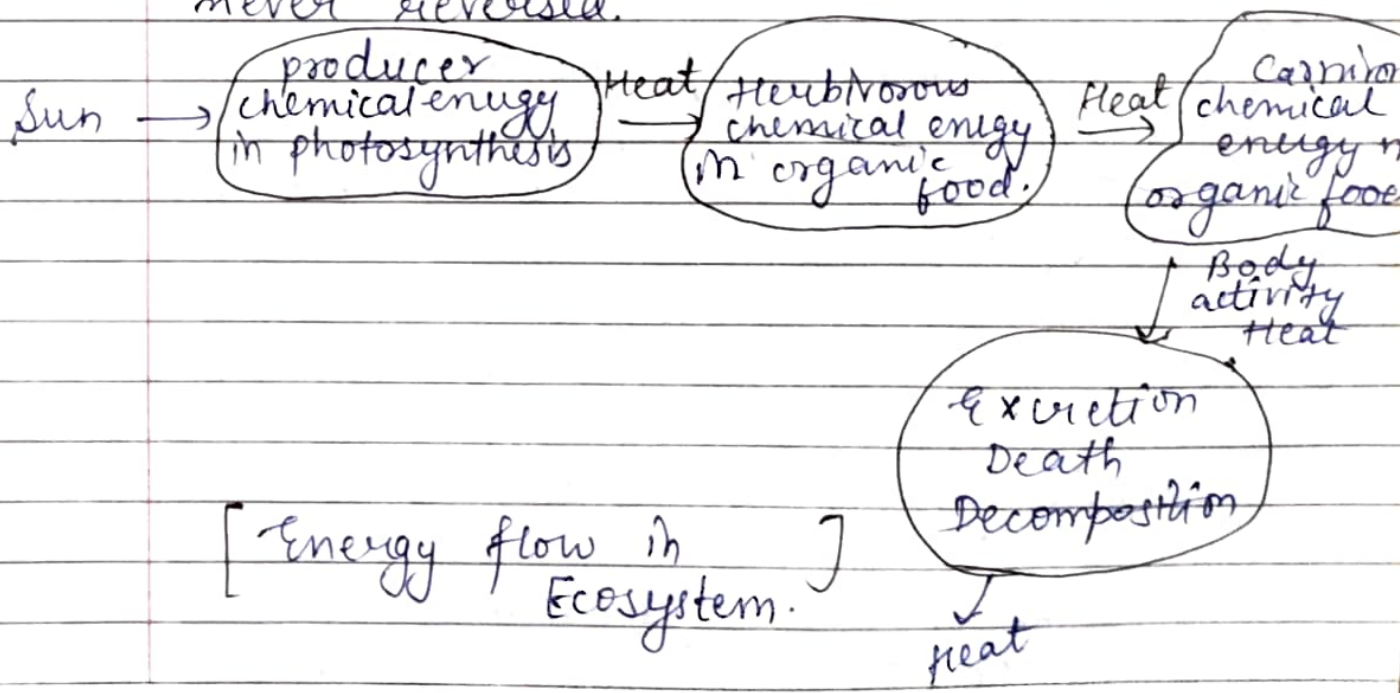
Energy flow an ecosystem · Each organism of Biosphere require energy for carrying on vital energy.
The ultimate source of energy for whole Biosphere is Sun. The radiant energy / or photonic energy of sunlight is converted into chemical energy by photosynthetic activities of producer. The amount of energy accumulated in green plants through the process of photosynthesis is known as primary productivity, however plants fails to utilize this large amount of energy. It is estimated that 3 percent of

Light energy falling on green plants is utilize by them, rest is lost as heat energy.

* When the herbivorous feed on plants a portion of energy from producer goes to herbivorous, However they don't eat the whole plant so lost of energy goes waste. It is approx 90%. of total energy.

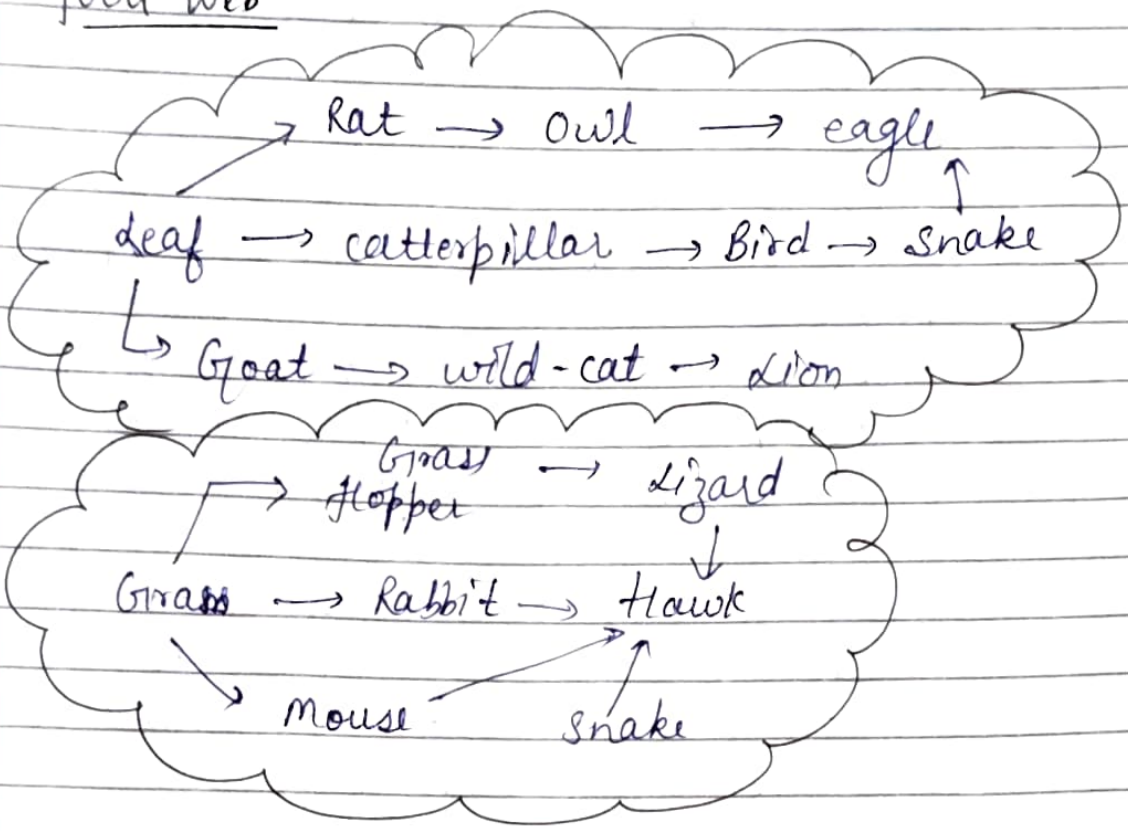
* Similarly when carnivorous food on herbivorous, here is loss of energy It is believed that 90%. of energy will lost only 10%. of energy is actually transfer from one trophic level to next one.

* The energy flow is always undirectional as it flow from lower trophic level to high trophic level. The flow is never reversed.



[Energy flow in Ecosystem.]

* food Web



* All food chain are actually interconnected in Nature this network of interconnected food chain is called food web.

Ecological Succession :→

It is the gradual process by which ecosystem change & develop by time.
Nothing remain same & habbitats are constantly change

Two types :→

1.) Primary Succession :→

It is the series of community change which occur on an entirely new habbitat, which

has never been colonize before. for ex a newly acquired sand dunes / rock face it very slow succession & take a long time to reach climax.

2) Secondary Succession :→
It is series of community changes which take use place on an previously colonize but disturb or damage habbitat for example land clearness or a fire after falling trees in a woodland. It is a comparatively fast succession & take shorter time to reach climax.

UNIT-3 NATURAL RESOURCES

Natural Resources :- Natural Resources are the substances used by us that exist naturally in the earth and made by humans. People do not make Natural Resources but gather them from the earth. for eg Air, water, Copper, wood, oil, wind energy, hydroelectric energy, Iron & Steel.

* **Classification**

→ **Depending upon the chemical Nature**

(i) Inorganic → water & minerals
(ii) Organic → like organisms and air products including fossil fuels.
(iii) Mixed having both organic or inorganic components like soil.

→ **On the basis of origin** :-

(i) **Biotic** :- Biotic resources are obtained from biosphere such as forest & animals and the materials that can be obtained from them. fossil fuels such as coal & petroleum are also included in this category because they are formed from decaying organism matter.

(ii) **Abiotic** :- are those that comes from non-living organism material. for eg. Abiotic

resources include land, fresh water, air and heavy metals including are such as gold, silver etc.

Deforestation

It can be defined as the large scale removal of trees from forest or other lands for the facilitation of human activities. It is a serious environmental concern. Since it can result in the loss of biodiversity: damage to the natural disturbance in the water cycle and the soil erosion. It can contribute to climate change and global warming.

Causes of Deforestation

(i) Agricultural Activities :- It is one of the significant factors affecting deforestation. Acc. to this it leads 80% of deforestation. Due to over growing of food products a huge amount of tree has been cut to grow crops & 33%. of agriculture cause deforestation.

(ii) Mining :- Increasing demand of minerals, mining in tropical forest is on the rise. And because large scale mining is an intensive, industrial undertaking & development of massive infrastructure,

(iii) **Climate Change**:- It is the leading cause of deforestation. Extreme weather events like wildfires (which are responsible for an estimated 10% of degradation).

(iv) **Urbanization**:- The construction of road is under taken. Here again trees are choped to built roads. Overpopulation to directly affect forest as with the expansion of cities.

UNIT:5 ENVIORNMENTAL POLLUTION

* Enviornmental pollution :→ It is defined as any undesirable change in physical, chemical and biological characteristics of any component of the enviornment (air, water, soil) which can cause harmful effects on various forms of life or property.

* Enviornmental pollution could be various type including air, water and soil pollution.

* Water Pollution :→ It is any physical chemical, biological change to water that adversly affect its use by alive beings.

* Causes of Water Pollution :→

(i) Industrial Waste :→ Industries and industrial sites across the world as a major contribute to water pollution. Many industrial site produce waste in the form of toxic chemicals and pollutants, through regulated, some still do not have proper waste management systems in place. In some rare areas, Industrial waste is not treated properly & dumped into nearby freshwater system

(ii) Marine Dumping :→ The process of marine dumping is exactly dumping garbage into the waters of the ocean. It might seem crazy, but household garbage is still collected and dumped into the oceans.

(iii) Sewage :→ Harmful chemicals, bacteria can be found in sewage and wastewaters even when it's been treated. Sewage & wastewater from each household is released into the sea.

(iv) Agriculture :→ In order to protect their crops from bacteria and insects, farmers often use chemicals and pesticides. When these substance seep into groundwater, they can be harm animals, plants & humans.

(v.) Global warming :→ Rising temperature due to global warming are a major concern in terms of water pollution.

* Ways to Reduce Water Pollution :-

(i) Use less plastic :→ It is very difficult to break down plastic after it is produced. Much of the plastic we consume ends up in the world water supply, where it is even harder to fish out & safely thrown away.

(ii) Reuse Items :→ Whenever you buy something that is not recyclable, such as plastic, it is better to reuse this item as many times as possible.

(iii) Cleaning chemicals :→ Similar to oils, cleaning chemicals are hazardous when they enter the water supply.

(iv) Garbage Disposal :→ Even though most homes have a garbage disposal system in the sink, it is better to use it as rarely as possible.

(v) Avoid Pesticides :→ If you need to overhaul your garden, attempt to do so without using any pesticides.

* NOISE POLLUTION :→ It can be defined as unwanted sound
→ It can be defined as any disturbing or unwanted noise that harms humans or wildlife.

* Causes :-

(i) Traffic Noise :→ Traffic noise accounts for most polluting noise in cities.

(ii) Air Traffic Noise :→ There are fewer aircraft flying over cities than there are cars on the roads but impact of an aircraft is greater.

(iii) Construction Site :→ Building and car park construction and road works are very noisy.

(iv) Animals :→ Noise made by animals can go unnoticed, but a howling or barking dog ~~hare~~ can produce very much noise.

(v) Industrilisation :→ has lead to an increase in noise pollution as the use of heavy machinery such as generator, mills.

* Effects :→

(i) Hypertension :→ It is a direct result of noise pollution which is caused due to elevated blood levels for a long duration.

(ii) Hearing loss :→ Constant exposure of human ear to loud noise that are beyond the range of sound that human ears can withstand damage the eardrums.

(iii) Sleeping disorder :→ Lack of sleep might result in fatigue and low energy level throughout the day affecting everyday activities. It leading to irritation and uncomfortable state of mind.

* Prevention :→

→ Honking in public places like teaching institutes, hospitals etc should be banned.

→ Musical instrument sound should be controlled to desirable limits

→ Dense tree cover is useful in noise pollution prevention.

→ Explosives should not be used in forest, and mining areas.

→ In commercial, hospital adequate sound-proof systems should be installed.

* LAND POLLUTION :→ It refers to the deterioration of the earth's land surface, at and below ground level.

* Causes :→

(i) Agricultural activities :→ As animal production grows, it becomes decouple from crop production causing normal nutrient cycle between plants, soil and animals.

(ii) Mining Activities :→ Mining has the potential to pollute the air & water supply, damage biodiversity and ecosystem and permanently alter natural landscape.

(iii) Urbanization :→ It will exacerbate poverty by preventing local municipalities from providing service to all residents.

(iv) Nuclear waste :→ The soil is also contaminated by radioactive waste from nuclear research station and nuclear power plant.

* Effects :→

(i) Climate change :→ Land contamination, such as that caused by mining, farming and factories may allow harmful chemicals to enter the soil & water.

(ii) Acid Rain :→ Forests, especially those at higher elevation also harmed by acid rain and fog.

(iii) Deterioration of fields :→ A chain reaction occurs as a result of soil contamination. It alters soil biodiversity, decrease soil organic matter and reduce soil filtering ability.

* Prevention :→

(i) Reduce the usuage of chemicals & pesticides :→

(ii) Reforestation :→

(iii) Recovering & recycling material :

✱ Integrated solid waste management :→

✱ Radioactive Pollution :→

It is a physical pollution of living organism and their environment as a result of release of radioactive substance into the environment during nuclear explosions.

✱ Causes :-

(i) Nuclear Accidents from Nuclear power plants
(ii) Defensive Weapon Development
(iii) Mining Sectors
(iv) Usage of Radioistope.

Effect :-

(i) Diseases :→ The most dominant illness linked to radiation is Cancer.

(ii) Infertility of Soil :→ Radiation exposure to the environment means that it is present in the soil.

(iii) Effect on Plant Life :- Plants are also exposed by radiation and much of damage is caused by increased UV waves.

Prevention

→ Avoid constructing Nuclear power plants.
→ Disposal of Nuclear Waste.
→ Proper Labeling
→ Alternative energy sources
→ Proper Storage
→ Reusing

India has Uranium preserves in Rajasthan, Jharkhand, chattisgarh etc.

Solid Waste Management :→

★ The term solid waste management refers to the complete process of collecting, treating and disposing of solid waste.

Types of Waste :→