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TERM END EXAMINATION

~~1) Ecosystems are not static, by the dynamics~~

(1)

1(a) Biodiversity is the variation of Earth species, genes and the ecosystem they are present in and the nutrition cycle they follow along with the energy flow that takes place in the hierarchy. There are three levels of biodiversity ⇒

GENETIC BIODIVERSITY: It is the difference in genes of the same species. These differences range from colour, shape, size and colour. These usually occur when a particular species adapt its living according to the abiotic components. If a species lack genetic biodiversity, the species would not be able to survive in harsh/extreme conditions and may even become extinct.

eg Different butterflies, different types of rice, pulses etc.

SPECIES BIODIVERSITY: It means the number of different organisms present in a particular area. It depends on the temperature and location. More the number of variety of species present, more ~~sp~~diverse it is

eg Different animals, plants present in an area - desert, rainforest etc

It depends on number as well. For example, if in a given area, 2 bird species and 3 ~~herbivor~~fish species are present whereas some other area has 5 bird species, the first location is more ~~spec~~ diverse.

ECOSYSTEM BIODIVERSITY: As Earth has different geographical conditions everywhere many different ecosystems are formed, which are home to different kind of flora and fauna. It is the group of species living in a particular area, share resources and interact with each other. It means a group of ecosystem present in a region.

eg Tropical ecosystem.

2(a) RISKS ASSOCIATED WITH MANAGING WASTE FROM — (2)

HOSPITAL:

Most waste generated from hospitals is non-biodegradable - plastic and metal waste. It can also include small amounts of chemical waste.

To manage this waste -

As this waste can be hazardous, it should be kept properly segregated and should be observed properly as it can be an infectious waste.

Storage area should be clean and protected from bacteria to prevent spreading any ailment.

Transportation of waste regularly in leak proof bags.

The waste should be deposited accordingly. If its plastic and metal, it can be sent to an incinerator. If it is chemical waste, it should be taken care accordingly -

KITCHEN:

Kitchen waste mostly include dry and moist waste which is biodegradable at times. It can have hazardous substances if not separated from before. The plastic containers can be recycled to save resources. The moist waste could be used to make compost and can be used as manure (vegetable peels etc). Waste containing heavy metal and all should be disposed in a landfill or sent to an incinerator. It can include old batteries, cleaning liquids. If the waste is not disposed, there are toxicity hazards, fire hazards and explosion hazards possible

NUCLEAR POWER PLANTS

Nuclear power plant waste include radioactive substances which can cause a lot of harm to humans as it effects the DNA. It has biological effects (neurological, genetic and many short term and long term effects)

To manage this waste, it should be contained in radiation-shield containers and buried in the ground. The waste should be isolated in remote locations. The waste should be limited as much as possible.

3 b

Major components of population growth are - (3)

birth rate - number of births per unit time in a given area.

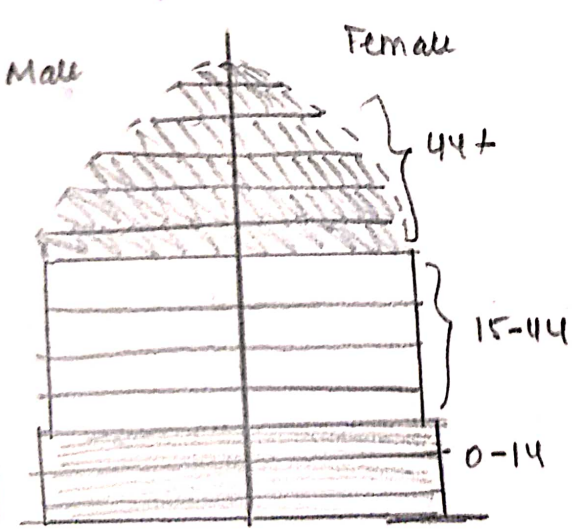
death rate - number of deaths per unit time in a given area.

immigration - Number of people leaving a particular place in a particular time

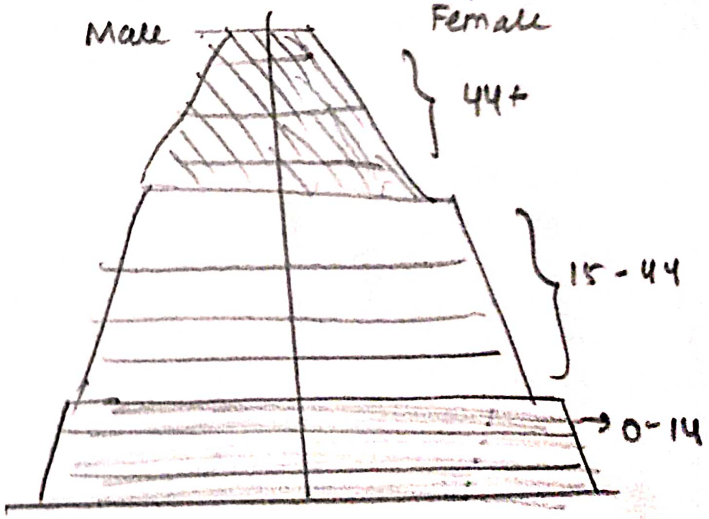
emmigration - Number of people coming to a place in a particular time

population - change → (births + immigration) - (deaths + emigration)

Age structure pyramid of Japan (example) and US (example)



Japan



US.

The Japan age graph is a stable graph and the US age graph is a expanding graph but it is expanding slowly. The birth rate is more in US as well as the death rate than Japan. The factor of high birth rate are high fertility rate, high immigration urbanisation and education. Factors which affect the death rate include high infant mortality rate and poor life expectancy. We can conclude that Japan has high life expectancy due to better life style, medical care, sanitation and better nutrition. The rise in number of people of reproductive age in US is because of arrival of immigrants from all over the world for religious and political freedom and in search of employment. Japan has more people in post reproductive age due to higher life expectancy.

(5)

4 A Forests would respond very drastically to the climate change. At this pace of climate change, there would be high rise in deforestation and forest degradation. Areas with rich biodiversity, flora and fauna, all will start to die and decline. Forest landscapes would die as the temperature would soon become unfeasible with time. The plants and organisms would try to genetically modify themselves and maybe new genetic biodiversity occurs, but with time it will also seaze as the conditions would become adverse. For example, a treet which flourishes in tropical regions would try to adapt before dying completely to suit the higher temperatures, but eventually it would die.

4 B Nutrients, temperature, CO_2, H_2O and light are the determinants of productivity in an ecosystem. Effect on —

PACIFIC OCEAN ⇒ Nutrients ⇒ As it is the sea, full of salt water, it has many chemicals present in it. Nutrients come from bottom of the sea (floor) and from the run offs. They are the highest in the coastlines. Light is present in the shallow side others use the energy of oxidation of chemicals under the Earth. Temperature is warm and cold both, depending on the depth. so we can say, that it is a highly productive area. ~~It is most affected by nutrients~~

STREAM: Streams are narrow and shallow than ocean. Nutrients are present because of the land runoffs. and CO_2 and O_2 is present in plenty in fresh water. Light is abundant as it is shallow. The temperature is favourable for a good aquatic life. It is a medium productive area. ~~and is most affected by~~ It can be said, productivity is most affected by light and least affected by nutrients.

5A (6) As the CEO of a private sector company, I would choose an energy source which

- is cheap, renewable and easy to obtain. I would try to have sustainable solutions over non-renewable sources of energy
- I would look out for more fuel-efficient appliances.
- Try to reduce pollution and health hazards
- Energy sources such as solar power plants, wind energy and biomass energy can be used if the office is located away from water bodies, or else tidal energy and hydro energy can be also used.

5 (B) Strategies to implement the environmental impact assessment for new developmental projects: (7)

- First the project is screened to check if it requires environmental clearance or not
- It is then assessed to see the issue it will address in the study.
- A base data is collected and monitored regularly of the environmental status of the area.
- After all these steps, impact prediction occurs. It is the assessment of impact of the project - directly or indirectly. All points are considered, merits/demerits and reversible and irreversible impacts.
- The mitigation checks the report and suggest changes and alternatives.
- Then the public is informed (in the form of environmental groups and associations) and asked for inputs and any further changes.
- The project proposer and the assessment authority then come to final point after a thorough discussion.

Monitoring the previous base data along with the operation time of the project.

Finally a risk assessment analysis takes place to check if any hazard could occur or not.