

Q#03

Global warming can be reversed:

"The rising temperature of earth due to natural and anthropogenic activities are termed as global warming."

It can be reversed by adopting following methods:

① Shift from non-Renewable energy sources to Renewable sources:

Renewable energy sources are a sustainable alternative of non-renewable polluted sources.

For Example:

Replace the fossil fuels with Solar, hydro and Wind energy to meet energy demands.

②

Replace Conventional vehicles to E-vehicles:

Conventional vehicles are major polluter by adding SO_x and NO_x into the environment. On the other

hand, Electric-vehicles are a sustainable pollution free source to reverse the global warming crisis.

③

Aforestation and Reforestation:

Forests are the great source of Carbon Sink. CO_2 is a principle gas that's causing global warming. Therefore, by growing forests, the process of Carbon Sequestration should be accelerated and reverse the global warming.

④

Goals of SDGs

Sustainable development goals (SDGs) the binding the states to never allow the earth's temperature above **1.5°C**. These bindings or commitments bound the states to reduce emission from industries in the race of rising economy.

⑤

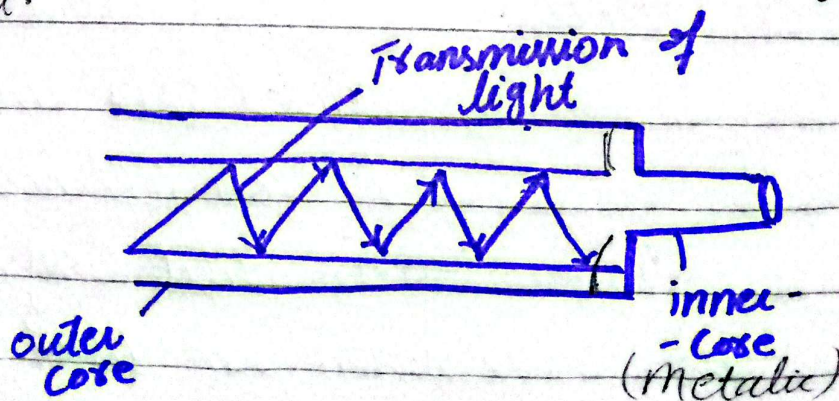
Store CO_2 in Rocks.

By Capturing Carbon from environment and store into rocks under the sea beds or in mountain rocks, the process of global warming should be reversed. This process is practicing by several states like Kuwait but it is an extremely expensive process.

(c)

Working of Optic fibers :

"Optic fiber" is a cable that is use to transmit light in the form of "Total internal Reflection". It is the fastest way to transmit signals without the chances of losing data.



An ordinary cables are successfully replaced with Optic fibers now, because

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the chances of data loss due to **resistance** were common and it take a lot of time to send signals from one place to another. In optic fibers, the outer core act as a protective layer to prevent from losses and ^{Total} internal reflection make the process fastest.

Working of Mobile phone:

Voice / Data Transmission:

Voice (Sent by the sender end) first Convert into digital form. These digital signals then Convert into **radio waves** for further transmission.

②

Cell Towers:

This world is divided into small cell (regions) and each cell has its own **Tower System** that carry the signals (radio waves) from mobile. Every Tower system has its own specific range.

Control unit:

③

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Signals from tower system then transmitted to Control unit of every cell. At this point, it is decided where and when to send these radio waves signals.

Receiver end:

"Receiver end" is the mobile phones of receiver person that convert this radio waves into digital format to transmit the message.

A Global Connection is possible due to this wireless system. Now the world is shifting from 5G, 6G and 7G's like in Japan to make the fastest communication possible.

(d)

Define the following:

(i)

Food additives:

"Extra/unnecessary materials added in food to enhance its appearance are called food additives."

It may be in the form of
Chemicals, Colours, Odors etc.

For example: Food colours in
ice-creams or rice.

(ii)

Food preservation:

Any substance that's adding in
food to enhance its shelf life
is called food preservation.

For Example: Adding Salt
over meat for long time preservation.

(iii)

Food Adulteration:

A material / chemical that change
the food quality and causing
harmful impacts on human health
is called food adulteration.

For Example:

Adding chemicals in milk to increase
its concentration of oil.

(iv)

Food Contamination

Any unwanted substance adding

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in food that make it spoil
and ~~unable~~ ^{lethal} to use/intake it.

For Example:

Production of Bacteria in milk
Contaminate it.

(b)

Define Ceramics:

Ceramics is a material that
is made up of combination of
metals and non metallic element
such as "aluminium, Silicon and
Oxygen"

Manufacturing: It is made up
of without melting - by heating it
or through crystallization process.

Properties:

- It is extremely hard materials.
- It's brittleness is high and
can break easily.
- It is temperature resistance mat-
erials (can bear 1700°C).
- It's density is low.

Applications of Ceramics:

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Ceramics are used in following applications:

Bricks, Tiles, Pottery, cutting tools etc.

Q#05:

(a)

DRM:

"DRM" is "Disaster Risk management". It is a process that identify, assess and design mechanism to deal with the disaster.

Importance of DRM:

Disasters are the natural or man induced calamities. For example:

Floods, Volcanic eruptions, Earth quakes, Cyclones, hurricanes, Avalanches

etc are all types of disaster that make vulnerable to societies that's facing it. Therefore, Disaster risk management having enormous significance.

Importance:

① Early warnings.

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Early warning systems alert the people before any disaster hit the community and enabled them to evacuate.

② Assist to develop Resilience:

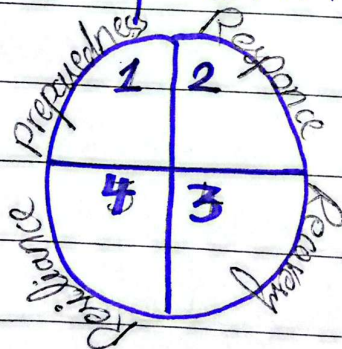
"DRM" is a key tool to develop resilience among vulnerable societies.

⇒ High vulnerability $\propto$ Affects of Disaster.

⇒ High Resilience $\propto$! vulnerability

⇒ Less vulnerability $\propto$ DRM

③ 4 phases of DRM:



Every phase has its own significance while dealing with disasters.

(b)

Biofuels:

Fuels that are composed of

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Organic materials are known as biofuels.

Generations of Biofuels.

There are 4 generations of biofuel:

1st generation consist of organic matters that can be used as food. For example: Sugar cane juice use as a fuel.

2nd generation:

Consist of residue of organic matters. These residue can be used as a fuel. For example residue/left over of sugar cane.

production of Biodiesel and Bio gas:

By using biofuels e.g. Algae can be use to produce biodiesel and bio gas.

⇒ Fats/oil + Methanol $\xrightarrow{\text{NaOH}}$
Methyl + glycerol (BY product) $\xrightarrow{\text{KOH}}$

⇒ Methyl (Bio fuel) $\xleftrightarrow[\text{(gravitational method.)}]{\text{separate}}$ glycerol

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First of all remove waste / water from biofuel materials such as **Soybeans**, algae, plants etc.

React it with methanol (alcohol) by using Catalysts of **Sodium and Potassium hydroxides**.

After reaction, Methyl and glycerol are formed. glycerol is a by-product and can be removed by **gravitational method** due to their different densities.

(C)

Digestive System.

A system that breakdown food into its respective Constituents and make them able to be a part of an animal body (bio-accumulation) is called digestive system.

In human body, it start from **"mouth to anus"** Every part have its specific significant role in food digestion. For example

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Role of Stomach and Small intestine are discussed here.

Role / Functions of Stomach:

The chief function of Stomach is the **digestion of protein** component in food.

When a Chyme or bolus is enter into stomach, the walls of stomach starting the secretion of **HCl**.

HCl reduces the pH of stomach and provide acidic conditions for food digestion. before the release of HCl **pepsinogen** is an additional secretion from the walls of stomach to protect it from acid.

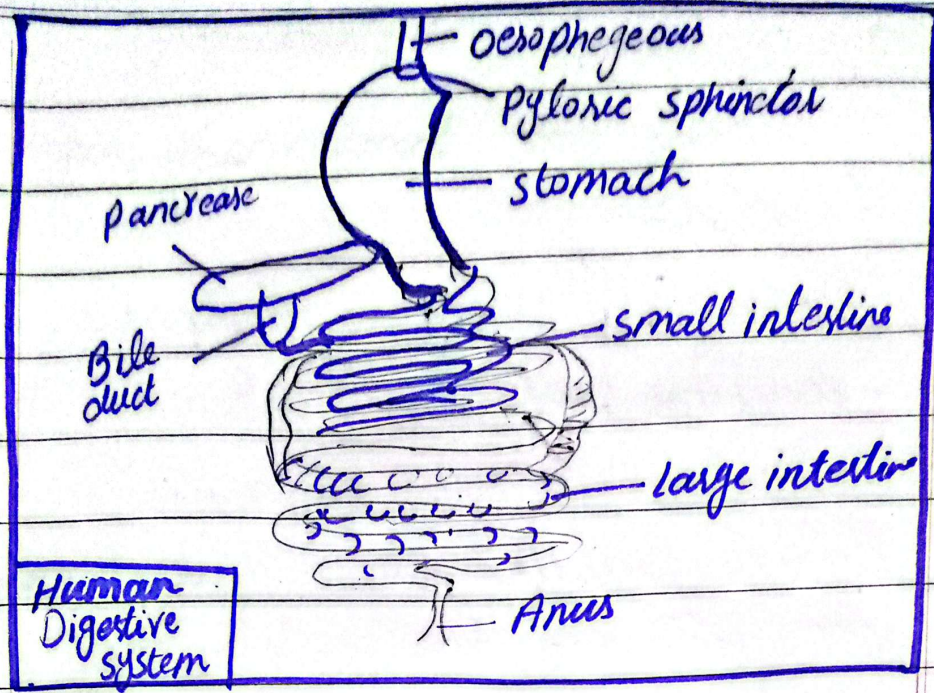
Role of Small Intestine:

Carbohydrates and Fats are completely digested in small intestines.

"Trypsin" is a chemical released in small intestine through **bile** secretion from pancreas assist in the complete digestion of food.

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(d)

Define plastic:

Plastics are a synthetic materials that are made up of "**polymers**".

It can be molded into any shape to form solid objects.

properties:

- They are insulator in nature. So, current can't pass from plastics.
- They are hard in nature depends on the material used to synthesise it.
- It can be molded easily in any required shape for usage.
- It is sensitive to high temperature and can be melted easily.

Applications.

Following are some applications of plastic:-

Pottery, Wires, Computer-machines bodies, packaging, medical equipments, electronic devices, building construction material are all the applications of plastic.

Environmental Risk.

- It is a non-degradable material and act as a solid waste at the last stage of its life cycle.
- Toxic chemicals such as HCCF etc are adding into environment under high temperature (sun light reaction)
- Their Toxic fumes persist long into environment and causing air pollution.