

Q: no: 04 (b)

Discuss the functioning of Liver and Pancreas.

Introduction:

The human body depends on various organs that work together to maintain internal balance and support life processes.

Among them, the liver and pancreas are two vital organs that play a central role in digestion, metabolism, and maintaining internal balance. While the liver produces bile and manages the metabolism of nutrients, the pancreas secretes digestive enzymes and hormones that regulate blood sugar levels.

Together, they ensure the smooth functioning of the digestive and metabolic systems.

1. LIVER

The Liver is the largest gland of the body. It performs vital metabolic, digestive, and detoxifying functions that help maintain homeostasis.

Functioning of the Liver

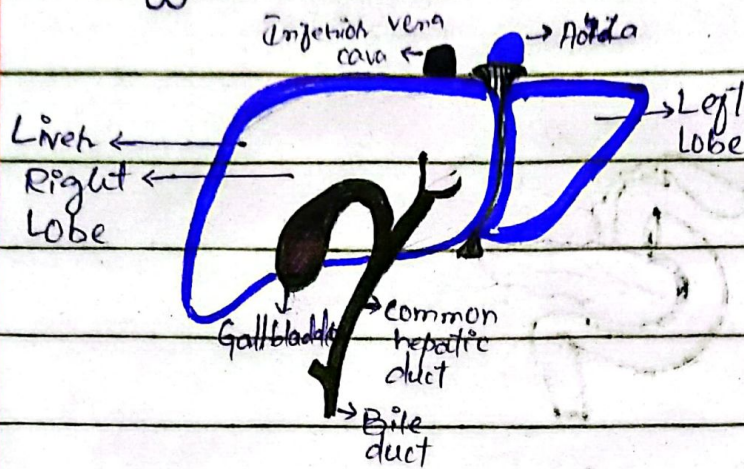
i) Digestive Function

- The liver produces bile, a greenish fluid that helps in emulsifying fats - breaking large fat globules into smaller.
- It regulates the concentration of amino acids in the bloodstream and plays key role in protein metabolism.

ii) Metabolic Function

- The liver converts excess glucose into glycogen for storage and breaks it into glucose when needed.
- It converts amino acids into urea for excretion.
- It synthesizes cholesterol and phospholipid.

helps in breakdown of fatty acids for energy.



(iii) Detoxification

- The liver neutralizes harmful substances such as drugs, alcohol and toxins.
- It converts ammonia into urea for excretion.

(iv) Storage

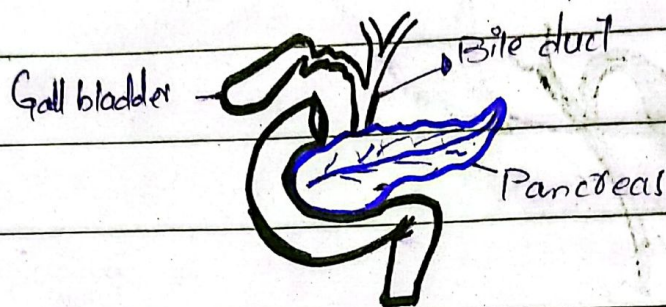
- It stores glycogen, vitamins, iron and other minerals for future use.

(v) Formation of Blood components

- Produces plasma proteins such as albumin.
- Plays a role in blood clotting by producing clotting factors.

2- Pancreas

The pancreas is a mixed gland - it has both endocrine and exocrine functions.



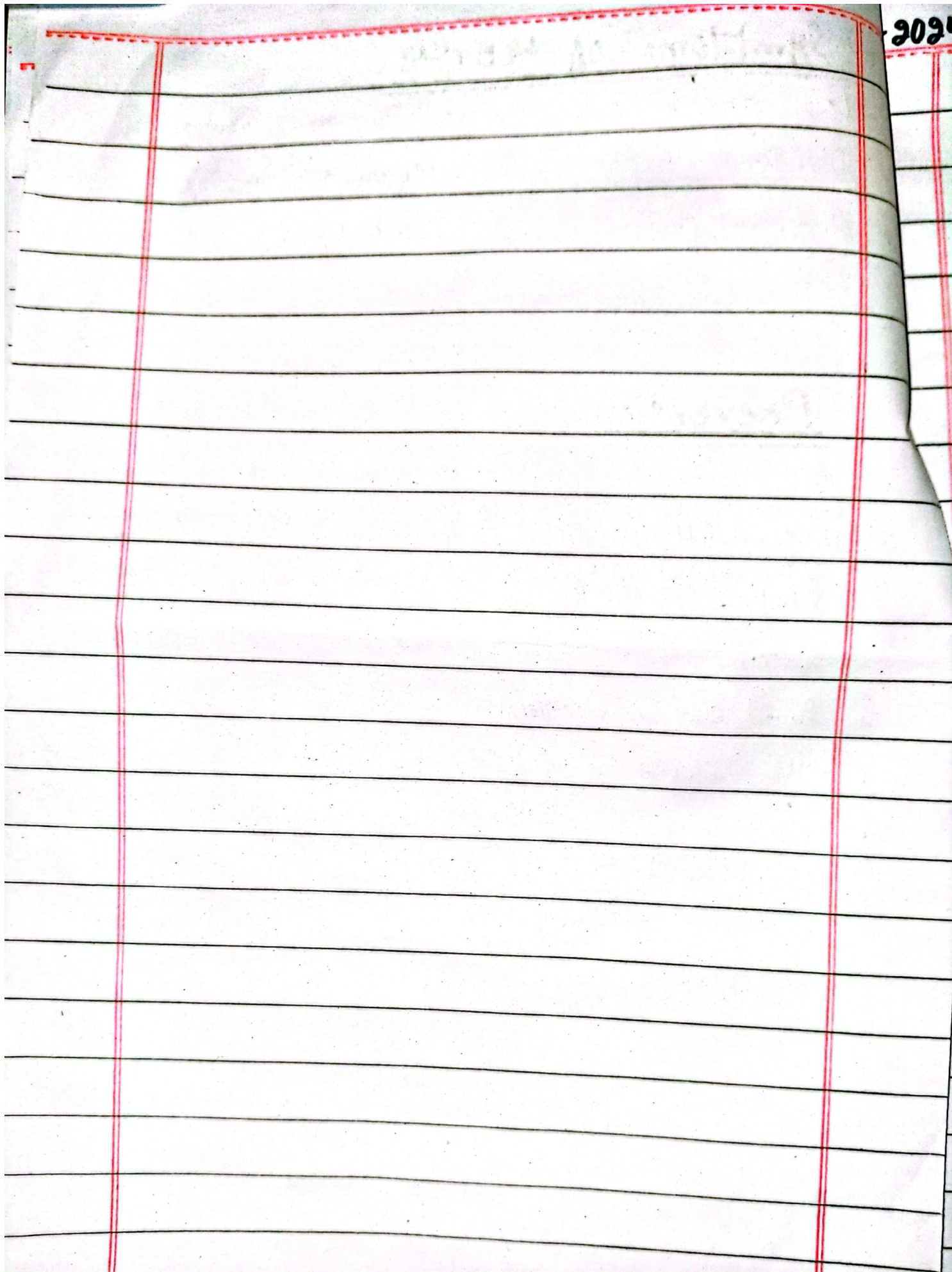
Functioning of Pancreas

i) Exocrine Function

- The exocrine part secretes pancreatic juice containing digestive enzymes (such as Amylase, lipase and Trypsin) which converts macromolecules into micromolecules.
- Pancreatic juice also contains bicarbonate ion, which neutralizes stomach acid entering duodenum.

ii) Endocrine Function

- It also contains Insulin and Glucagon, together they both maintain blood glucose balance (Homeostasis).
- Insulin : lowers blood sugar level
- Glucagon : Raises blood sugar level.



Q: NO: 03 (C)

What is hepatitis? Give its types and briefly explain its common symptoms along with its preventions

Hepatitis

- Hepatitis is inflammation of the liver.
- The inflammation damages liver cells and affects its functions such as detoxification, protein production and bile secretion.
- It is commonly caused by viral infections

i- Autoimmune Hepatitis

It is a disease that occurs when body makes antibodies against liver tissues.

ii- Non viral Causes

Hepatitis that occurs as a secondary result of medications, drugs and alcohol.

Types of Hepatitis

1- Hepatitis A

- It's a viral disease that can cause mild to severe illness.
- Spread by contaminated water, fecal, oral route.

2- Hepatitis B

- Caused by B virus.
- Spread by blood, Mother to child during child birth.

3- Hepatitis C

- Caused by Hepatitis C virus.
- blood borne.

4- Hepatitis D

- Caused by D virus but needs Hepatitis B virus to survive and multiply.

5- Hepatitis E

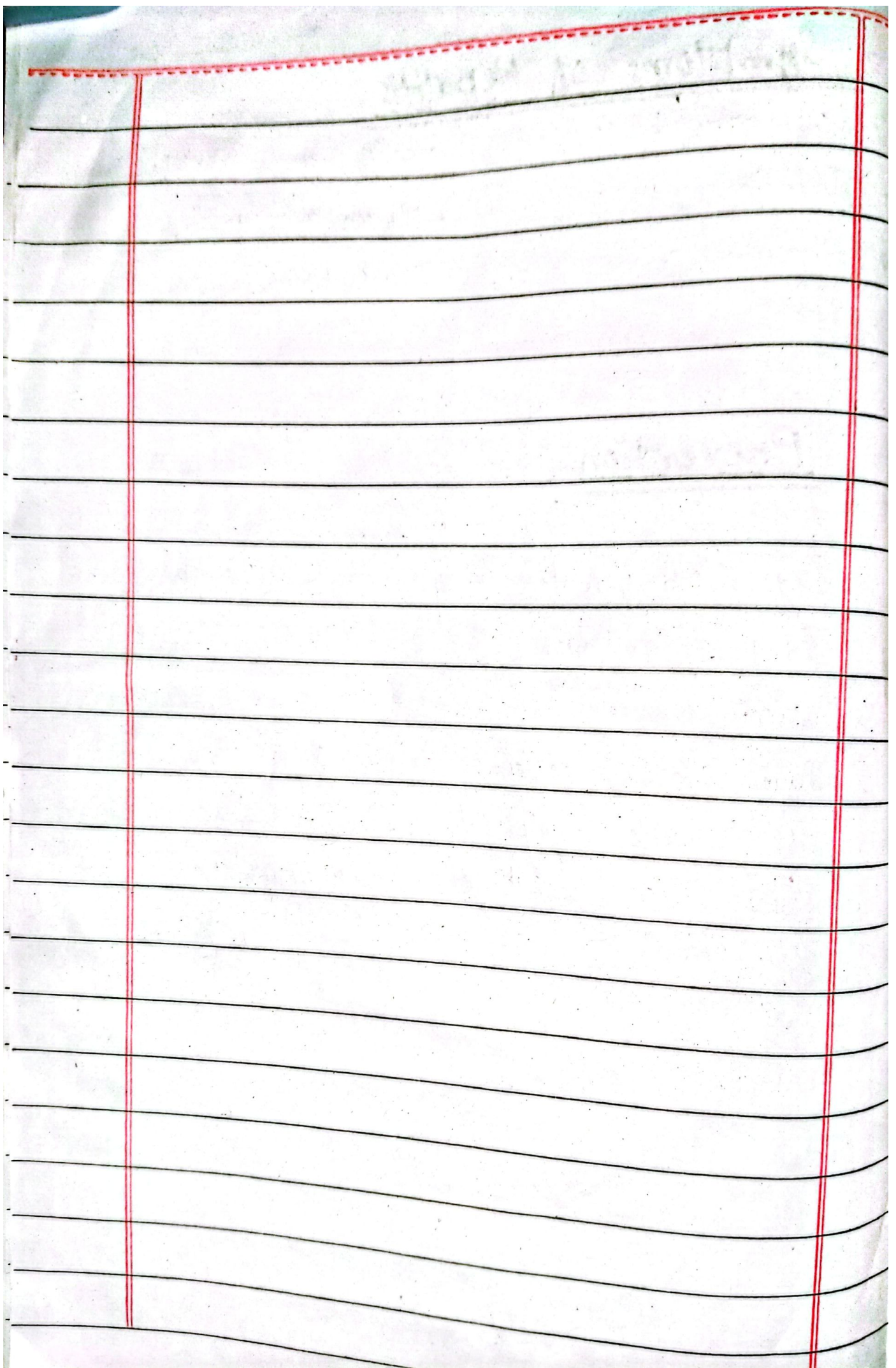
- Caused by E virus.
- Spread by contaminated water and food.

Symptoms of Hepatitis

- Loss appetite
- Jaundice
- Abdominal pain
- Fear
- Fatigue and weakness
- Nausea and vomiting
- Dark Urine

Prevention

- Safe drinking water
- Proper sanitation
- Vaccine
- Avoid sharing needles
- Use sterile equipment
- Screening of blood before transfusion



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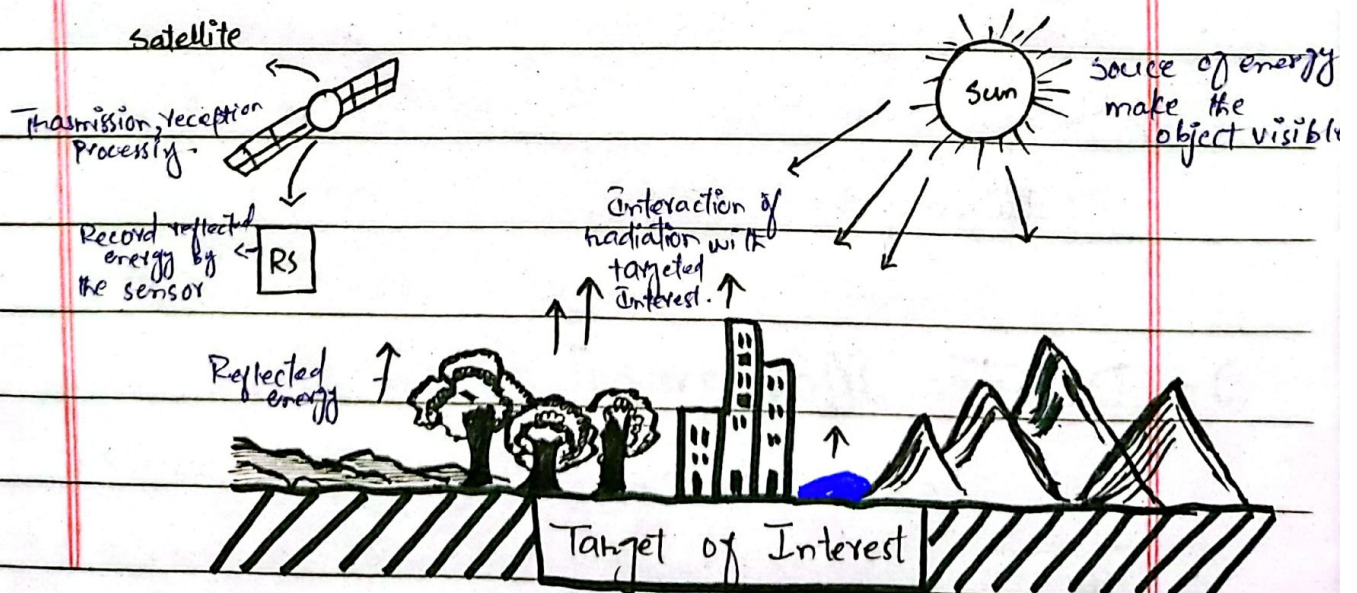
What is the role of Remote sensing and GIS in environmental sciences? Discuss briefly.

Remote Sensing

Remote sensing is the science to gather information related to any geographic area or location by using the sensors.

Geographic Information System (GIS)

Geographic Information system is a computer system to store and present the data in the form of maps. (GIS Mapping)



Role Of Remote Sensing And GIS In Environmental Sciences

Remote sensing and Geographical Information System (GIS) are two powerful tools that help scientist monitor the Earth's surface, detect environmental changes and plan for sustainable management. Together they provide accurate, timely and large scale data for understanding and protecting environment.

1- Environment Monitoring

- Remote sensing satellites capture real-time images of earth, allowing continuous monitoring of forests, land use, water bodies and Urban growth.
- GIS integrates this data to map and analyze changes over time, helping detect deforestation, pollution patterns etc.

2- Disaster Management.

- Assessing natural hazards like floods, earthquakes etc.
- Satellite images help identify vulnerable areas, while

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GIS models predict risk zones.

- GIS assist in preparedness, damage assessment and recovery planning.

3. Climate Change studies

- RS provides long-term data on temperature sea level etc, which helps evaluate impacts of climate change.

4. Land Use and Land cover Mapping

- Map and Analyze accessible and inaccessible areas.
- Helps in monitor and study changes in agriculture, forests and Urban areas, aiding sustainable land-use planning.

5. Biodiversity and Wildlife Conservation

- locate and monitor natural habitats, migration routes and protected areas to support wildlife conservation and habitat restoration.