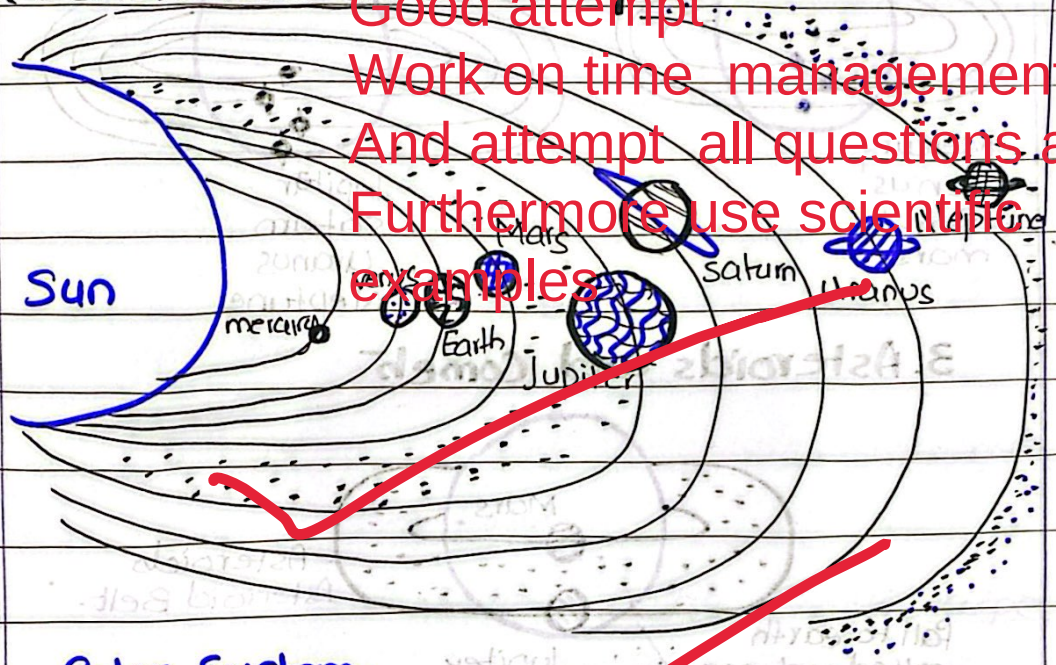
Precis GSA _____ تاریخ: (5)

Keep balance in your answers
Keep length of all answers equal
Good attempt
Work on time management
And attempt all questions at least
Furthermore use scientific examples

Q.No.4

(a) Short Note on Solar System



Solar System

The solar system is a group of objects that orbit around the sun. It was formed about 4.6 billion years ago.

1. Bodies in Solar System

It is a collection of celestial bodies including Sun, stars, moons, planets, asteroids and comets along with other objects.

2. Planets and their Classification

The Planets are classified into two Groups

Inner Planets	Outer Planets
1. Terrestrial Planets	1. Gas Giant
2. Rocky planets	2. Rings systems

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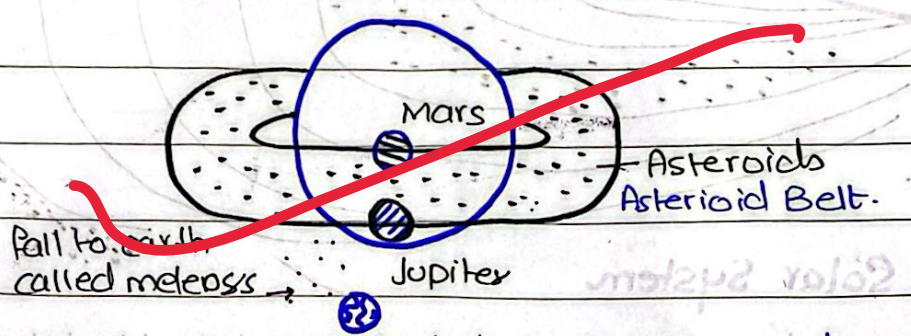
and multiple moons.

Much larger and composed of gasses. like hydrogen and helium.

- Mercury
- Venus
- Earth
- mars

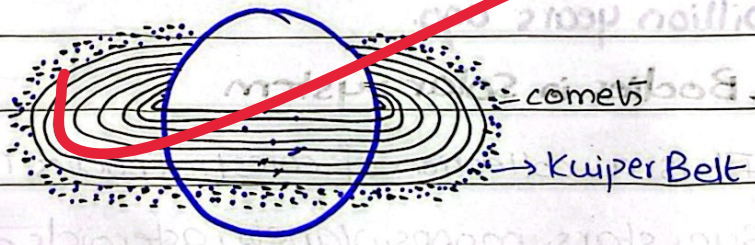
- Jupiter
- saturn
- Uranus
- Neptune.

3. Asteroids and Comets



Fall to earth called meteoss

Asteroids are present between mars and jupiter. Rocky objects. (millions of small chunks of metal and rocks.)



Comets are made up of ice and dust originate from kuiper Belt. They often tails when approaching the sun.

The solar system itself is only a small part of a huge **system of stars** called **Milcy way galaxy**. The Milcy way galaxy is just one of billions of galaxies that make up the universe. At the

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center of the Solar system is Sun. It is known as the largest object in the solar system; the Sun contains more than 99 percent of all the material in the solar system. It is a ball of hydrogen and helium.

The gasses that surrond the sun are shout out tiny particles called the solar wind. Solar wind causes auroras (display of colored lights at the night sky in parts of Earth's). In Northern Hemisphere called the Northern lights.

Then are the planets, ~~com~~ asteroids, comets, Kuiper belt and oort cloud the solar system: Scientists belive that a force called gravity pulled parts of the dust into clumps. largest clumped was squeezed together so tightly that it got very hot and eventually became Sun. and similardy planets were formed by other clumps.

In 1957, the sovict satellite sputnik 1 made the first human made object to orbit around the ~~sun~~ Earth. Since, then scientists have sent many space crafts to ~~many~~ the explore different parts of the solar system.

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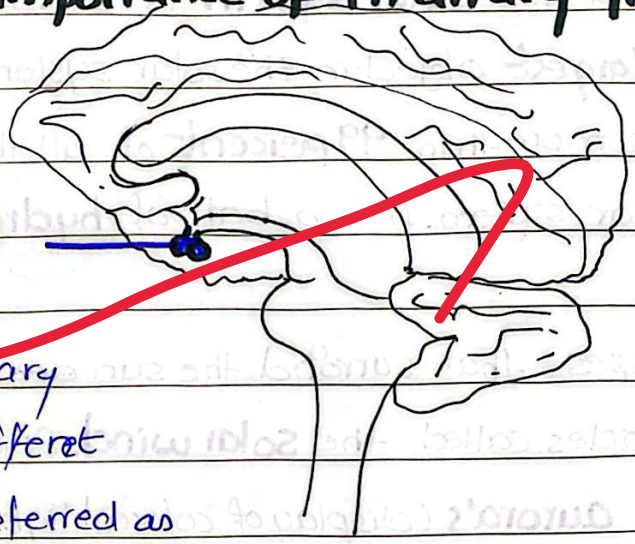
(b) Give importance of Pituitary gland



The pituitary gland is ~~offeret~~ ~~reffered~~ referred as "master gland" and is controlled by **hypothalamus**.

1. Regulates Growth and Development

The Human Growth Hormone (HGH) produced by anterior pituitary is essential for growth, development and repair of tissues and organs throughout the body: crucial during childhood and adolescence.

2. Controls Metabolism

Through the secretion of Thyroid stimulating hormone (TSH), regulates the function of thyroid gland regulate: energy levels, body temperature and metabolic rate.

3. Regulates Stress Response

The ACTH stimulates the adrenal glands to release cortisol which play's a role in managing

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the body's responses to stress and blood sugar levels and overall immune system.

4. Reproductive Function and Sexual Health

The gonadotropins, control sexual development and function. The hormones regulates menstural cycle in femals, and sperm production in males.

5. Milk Production and Breastfeeding

The Prolactin (PRL) hormone produced by anterior gland pituitary is crucial for milk production in the mammary glands. supports breast feeding.

Other functions Elaborating its importance

6. Water Balance and Hydration

7. Childbirth and uterine contractions
- oxytocin
- uterin contractions during labor.

8. Skin and Hair Pigmentation
- melanin production

9. Coordination of Endocrine System.
acts as control center.

10. Essential for overall functioning of the body.

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C- Differentiate between RAM and ROM

define terms Nibble, USB, and mother board

RAM Random Access Memory	ROM Read-only Memory
1. Temporary memory used to store data that is currently being used by CPU.	1 Permanent memory that cannot be modified easily.
2. Data is lost when the power is turned.	2. Data is retained even when the power is turned off.
3. Used to store data and programs actively being run by the system.	3 4. Used to store critical data, essential for system startup.
4. Both read and write operations are possible.	4. Primarily read-only, in some types can be written.
5. Faster than ROM, allows quick access to data.	5. Slower than RAM, since its data is not actively used and stored permanently

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Definitions

1. Nibble

A unit of digital information that consists 4 nibs.

2. USB

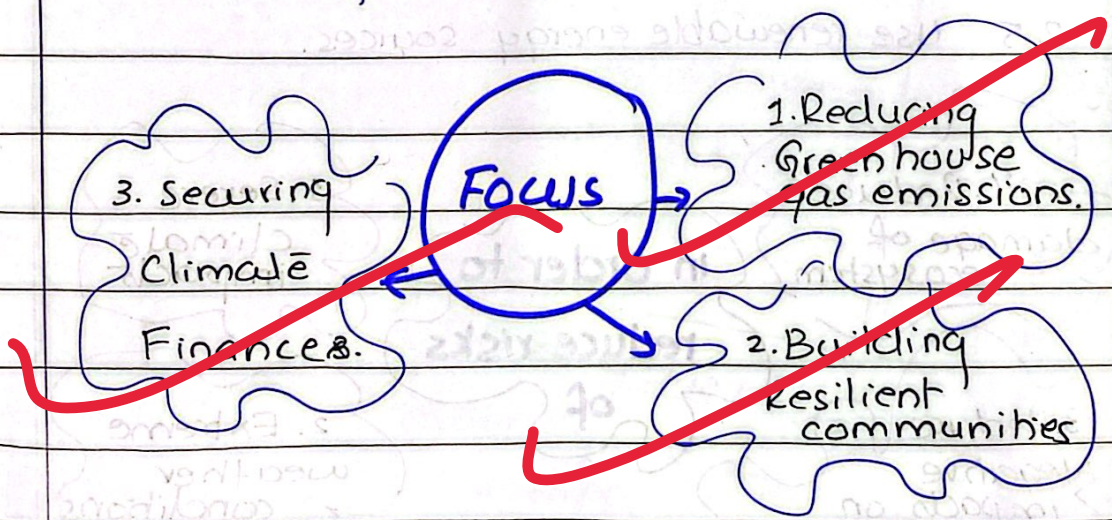
Universal Serial Bus, is a standard for connecting devices to a compuler or other Electronic devices: enables transfer of data between devices.

3. Motherboard.

The main circuit board in compuler. that holds and connects all essential components.

d. COP 29 targets to limit temperature rise upto 1.5°c. Comment:

The 29th conference of ~~EOP~~ Parties (COP) to UNFCCC (COP29) aims to limit global warming to 1.5°c. To achieve this, COP29 is focusing on the



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2. Actions Required to Limit Warming to 1.5°C

Reduce Emissions

2.1. Emissions need to be reduced by 43 pc by ~~2023~~ 2030. and 60 pc by 2035.

2.2. Transition away from fossil fuels: countries need to develop plans to transition away from fossil fuels and cover all green house gases and sectors.

2.3 Increase climate finance to take stronger climate action.

2.4 Governments should **remove fossil fuel subsidies** and implement **robust carbon pricing**

2.5 Use renewable energy sources.

In order to reduce risks of

1. Severe climate impacts
2. Extreme weather conditions
3. Reduce negative impacts on socio-economic system
4. Reduce damage of ecosystem

(a) تاریخ: _____

Q.2. Sea Surface Temperature Rise and its Impact on Tropical cyclones

Sea Surface Temperature Rise

The increase in the temperature of the uppermost layer of the ocean, primarily caused by global warming due to greenhouse gas emissions.

Impacts of Tropical Cyclone

1. **Increased cyclone Intensity:** Warmer sea provides more energy to tropical storms increasing their intensity and making them more strong.

2. **Wider Cyclone Reach** Sea temperature rise may become a reason of these cyclones forming in the areas where they have not formed before.

3. **Higher Rainfall** Warmer seas increases the moisture in the air, leading to heavier rainfall during tropical cyclones.

4. **Risk of Increased Flooding** due to heavier rainfall during tropical cyclones, the risk of increased flooding intensifies.

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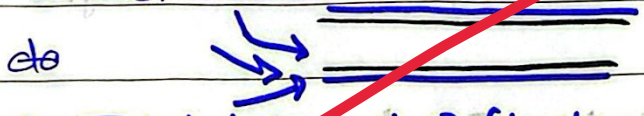
5. Disrupted Atmospheric Patterns:

Warmer seas alter wind patterns and potentially increase the duration of cyclones along with their path.

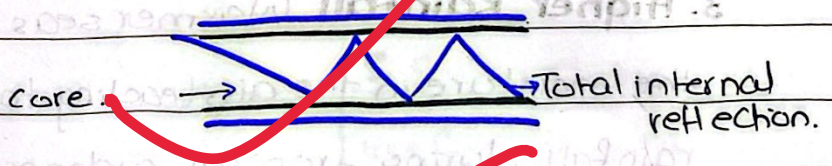
b. Working of Optical Fiber

Optical fiber works by transmitting data as light pulses through thin strands of glass or plastic fibers.

1. **Light Transmission:** Data is converted into light signals by a laser or LED at the source.



2. **Total Internal Reflection:** light signals travel through the core of the fiber by bouncing off the walls. the process is called internal reflection. Prevents light from escaping.



3. **Low Signal loss:** Due to nature of light transmission, optical fibers have very low signal loss as compared to electrical cables allowing data to travel long distance.

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4. **High Speed Data Transfer:** light signals can travel at the speed of light, enabling extremely fast data transmissions, making it ideal for internet, telecommunication, networking

5. 

The core is surrounded by cladding, a layer of material with lower refractive index makes sure the light signals stays within core.

C. Different Ways Microorganisms can help in producing Meeting Shortage of Fuel

Microorganisms can help in meeting shortage of fuel through the following ways.

1. **Bioethanol Production**

Microorganisms like yeast can ferment sugars from crops, corn or sugarcane to produce bioethanol, a renewable fuel used in vehicles.

2. **Biodiesel:** Certain bacteria and algae can produce oils that can be converted into biodiesel, a cleaner alternative

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3. **Biogas Generation:** Anaerobic bacteria decompose organic waste: agriculture, food or swage, to produce methane gas. a key component of biogas.: used for electricity generation and heating.

4. **Algal Biofuels:** Algae-based biofuels can produce a high amounts of lipids that can be converted into biodiesel.

5. **Hydrogen Production** certain bacteria are capable of producing hydrogen gas through biochemical reactions.

6. **Microbial Fuel Cells:** Microorganisms in Microbial fuel cells (MFCs) can convert organic material directly into electricity.

d. Briefly describe: Food additives and Food Preservatives

Food Additives	Food Preservatives
1. Used as to enhance flavor of the food.	2. Used to Preserve food

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2. Food Additives are used as colorants, to make food attractive like food dyes.	2. Food preservatives are restored in their original forms, no additions are made.
3. food additives are food sweeteners to enhance the taste of the food	3. Original form of sugars and salt is maintained preventing bacterial growth and presserving meat, fish, fruits
4. Thickeners and stabilizers to enhance the outlook, and stability of the food.	4. Organic acids such as vinegar and citric acid help lower the pH of food, making the environment for growth of microorganisms unsuitable.
5. Also used as additional nutrients or vitamins to food.	5. Sulfur dioxide mainly use for drying fruits and controls the growth of fungi.