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SECTION: B

Q.NO.07

average of 7 consecutive numbers is 20.
largest number of these = ?

Soln:

∵ average = $\frac{\text{sum of total number}}{\text{total numbers } (n)}$.

∴ Sum = average × n

Sum = 20 × 7

Sum = 140.

Now,

∵ consecutive series of 7 numbers will be;

$x-1, x-2, x-3, x, x+1, x+2, x+3$.

where, x = the middle number.
↑ consecutive

∵ for an odd series, middle number is equals to the average;

∴ $x = 20$.

∴ $(20-1)+(20-2)+(20-3)+(20)+(20+1)+(20+2)+(20+3) = 140$

∵ largest number in the series is;

$(x+3) \Rightarrow 20+3$.

∴ the largest number is 23.

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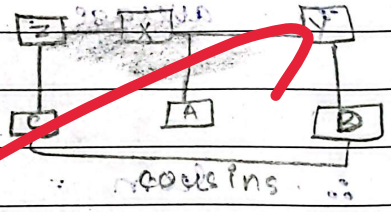
To verify, lets solve the series,

$17 + 18 + 19 + 20 + 21 + 22 + 23 = 140$

∴ The largest possible number in the given series is 23.

b-



∵ A and C are cousins from the father's side.

Also, the data tells us that A and D are cousins as well.

∴ But, D and C are not brothers.

Therefore, D and C are cousins to one another.

Answer:- The relationship between D and C is that of cousins.

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c- Missing number in the sequence.

(1) 13, 24, 46, 90, 178, 354.

13 x 2 = 26, 26 - 2 = 24

24 x 2 = 48, 48 - 2 = 46

46 x 2 = 92, 92 - 2 = 90

90 x 2 = 180, 180 - 2 = 178

178 x 2 = 356, 356 - 2 = 354

(2) 1, 2, 10, 37, 101, 226.

$2-1 = 1^3$

$10-2 = 8 = 2^3$

$37-10 = 27 = 3^3$

$101-37 = 64 = 4^3$

$x-101 = 125 = 5^3$

$226 + 125 = 351$

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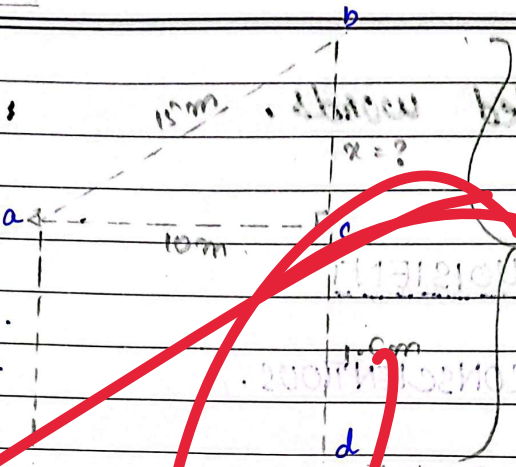
Q.NO.08:



$\overline{cd} = 1.5\,m$

$\overline{ab} = 15\,m.$

$\overline{ac} = 10\,m.$

$\overline{bc} + \overline{cd} = ?$

Soln:-

Since it is a right angle triangle

$\therefore \quad H^2 = P^2 + B^2$

or,

$\overline{ab}^2 = \overline{bc}^2 + \overline{ac}^2$

$\overline{bc}^2 = \overline{ab}^2 - \overline{ac}^2$

$\overline{bc}^2 = (15)^2 - (10)^2$

$\overline{bc}^2 = 225 - 100$

$\overline{bc}^2 = 125$

Taking square root on both sides:-

$\sqrt{\overline{bc}} = \sqrt{125}$

$\therefore$

$\overline{bc} = 11.1\,m.$

For height of the tree;

$\because \quad x = \overline{bc} + \overline{cd}$

$x = 11.1 + 1.5$

$\therefore \quad \boxed{x = 12.6 \text{ meters}}$

Hence, height of the tree is 12.6 m.

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b- Jumbled words.

(1) SONECUOISIENT

Answer:- CONSCIENTIOUS

(2) EIVENPRRAOST

Answer:- PRESERVATION

(3) UORSIULDC

Answer:- LUDICROUS

(4) UNSPRESE

(5) NMILAOPC

Answer:- COMPLAIN.

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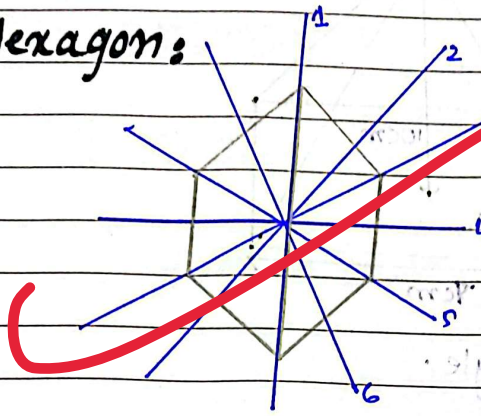
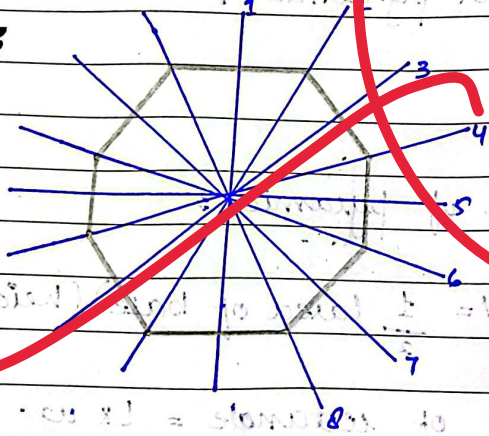
c- Lines of symmetry in;

Hexagon:



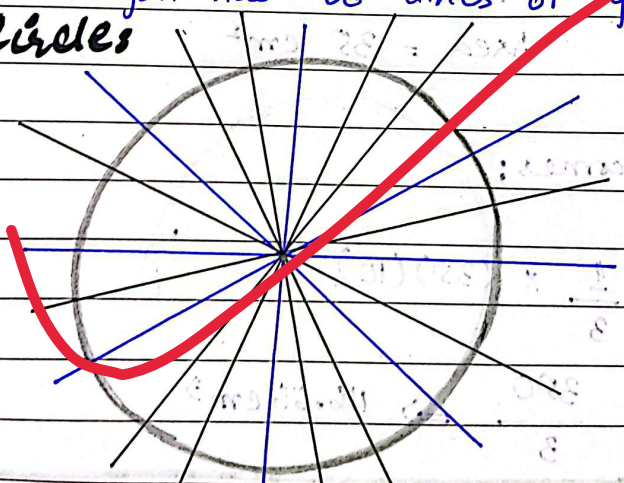
A hexagon has 06 lines of symmetry i.e: it can be divided into 2 equal halves in 6 ways.

Octagon:



An octagon has 08 lines of symmetry.

Circle:



A circle has infinites lines of symmetry. Every line passing from center, divides the circle into 2 equal parts.

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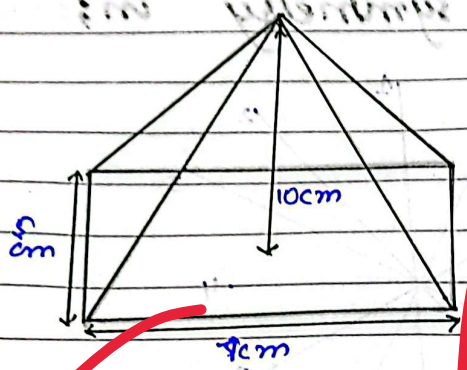
1-



Base → rectangle.

length = 7cm.

width = 5cm

height = 10 cm

volume of pyramid = ?

Soln:-

Volume of pyramid ;

$$V = \frac{1}{3}(\text{area of base})(\text{height}) \longrightarrow (1)$$

∵ Area of rectangle = L x w.

Area = 7 x 5

∴ Area = 35 cm^2

∴ eq (1) becomes;

$$V = \frac{1}{3} \times (35)(10)$$

$$V = \frac{350}{3} \Rightarrow 116.66\ cm^3$$

∴ Volume of the pyramid is 116.66 cm^3

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PART-II

SECTION: A

Q. NO. 02:- (a)

Ingenous Rocks	Metamorphic Rocks.
Definition	
They are the type of rocks formed due to the solidification of lava.	These ~~rocks~~ are the rocks formed from the transformation of an existing rock type into a new rock type.
Formation	
Formed due to solidification of magma or lava due to decline in tempera-ture.	They are formed due to stress from heat, pressure or reactive fluids in earth.
Composition	
They can be composed of minerals like quartz and biotite.	They are composed of minerals like titanite and garnet.

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Texture

These rocks do not have layers.

These rocks can have numerous layers. (foliation).

Examples

For example Granite.

Slate can be a good example of metamorphic rocks.

(b)

SMOG

Smog is a type of air pollution that occurs when pollutants react with sunlight. It is often a combination of smoke and fog.

Formation of Smog:

Pollutants + weather conditions ⟶ Smog.

Primary Pollutants: Emitted directly from sources like vehicles, industries and burning of fossil fuels. e.g: SO_2, NO_2, etc.

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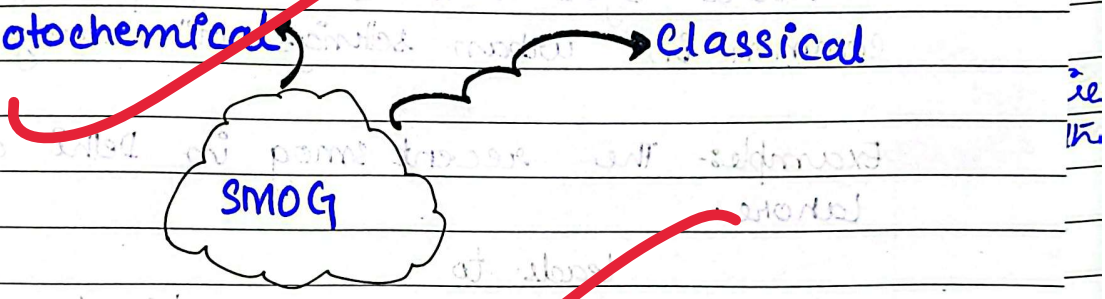
Secondary Pollutants: Formed in atmosphere through chemical reactions between primary pollutants and sunlight. e.g: O_3, etc.

Weather Conditions: Smog is formed under stagnant air conditions where pollutants do not have the space to escape.

Types of Smog:-



1. Classical Smog

It is often referred to as London smog. It is a mixture of SO_2, particular matters and moisture. It is formed at cold climatic conditions.

Characteristics.

Greyish in appearance.
Common in areas of fossil fuel consumption.
Leads to respiratory stress.

Example:- The London smog of 1900's.

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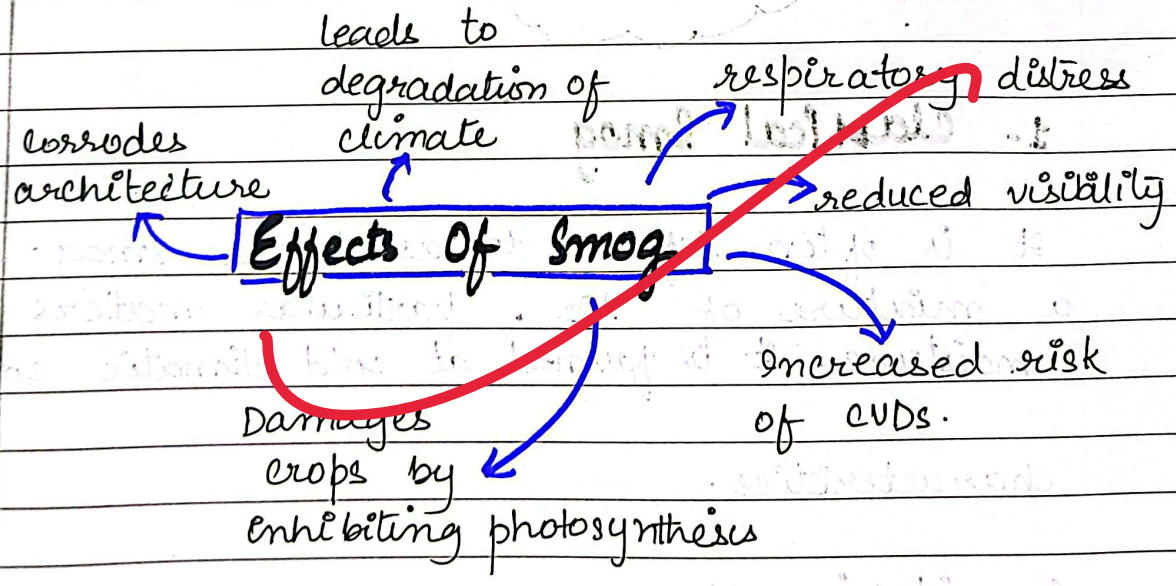
2- Photochemical Smog:

Often referred to as Los Angeles Smog. It is composed of nitrogen oxides and O_3. Mostly occurs in warm climatic conditions in the presence of sunlight.

Characteristics:

Brownish in appearance
Irritates eyes and causes respiratory distress
Common in urban settings with heavy vehicles.

Example: The recent smog in Delhi and Lahore.



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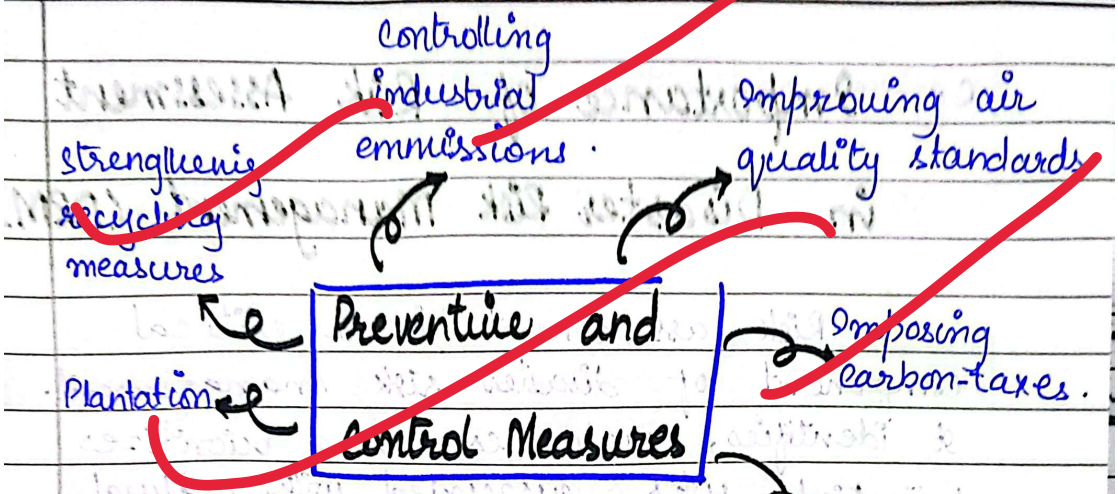

Smog remains a significant threat to the modern world of industrialization and threatens public health. It requires global and local cooperation to mitigate the associated impacts.

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C- Importance of Risk Assessment in Disaster Risk Management (DRM)

Risk assessment is a critical component of disaster risk management. It identifies, evaluates and prioritizes potential risks associated with natural and induced hazards.

Identification of Hazards:

This helps in preparing mitigation and preparedness strategies for possible future disasters.

Understanding Vulnerabilities:

It helps in assessing which population, area and infrastructure is most vulnerable to the disasters. It leads to focus of resources in disaster prone areas to reduce impact.

Helps in Informed decision making:

It provides data driven insights to policy makers and stakeholders.

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4. Designing appropriate mitigation strategies

This reduces the impact of disaster in prone areas.

5. Development of Emergency Response Plans

By anticipating potential disaster threats, it helps in preparing emergency response protocols.

6. It reduces losses of lives and infrastructure

7. Enhancing resilience

Risk managements allows the authorities to develop sustainable and resilient infrastructure, thereby reducing associated damage.

8. Public awareness

It helps the communities in understanding risks and helps in building preventive measures.

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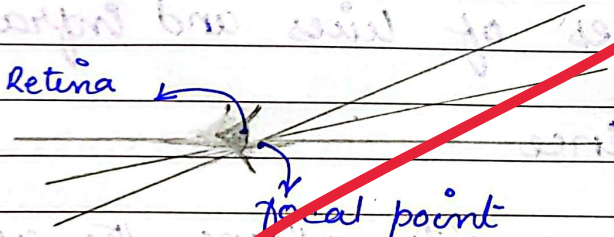
d-

Short-Sightedness (Myopia)

It is a vision disorder in which distant objects appear blurry, while close objects can be seen clearly. It occurs when light entering the eyes focus in front of retina rather than on it.



Causes

- elongation of eye ball
- Increased curvature of the cornea or lens.
- Genetic factors

Correction

- wearing glasses with concave lenses
- refractive surgery to adjust cornea to adjust the focal point.

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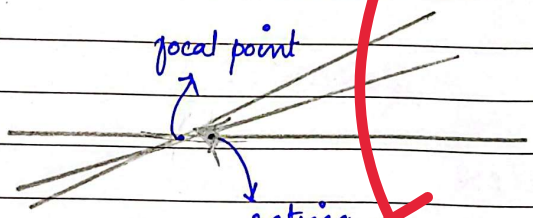
Far-Sightedness (Hyperopia)

Vision disorder in which close objects become/appear blurry. It happens because light entering the eyes focus behind the retina.



Symptoms

- Eye strain and headaches
- Blurry vision of distant objects
- squinting eyes to improve focus

Causes

- Shortened eyeball
- flattened cornea or lens
- decline in lens elasticity over time.

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Symptoms

- Difficulty focusing near objects.
- eye strain.
- headaches and fatigue.

Correction

- Convex lenses' glasses.
- refractive surgery to adjust cornea.

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Q. NO. 04. (c)

	RAM (Random Access Memory)	ROM (Read-only Memory).
Definition	It is a type of volatile memory used for temporary storage.	It is a type of permanent memory used for permanent storage.
Volatility	Data is lost after turning the power off.	Data is permanent.
Memory	It has read and write memory.	It is a read-only memory.
Speed	It provides faster access.	It is slower as compared to RAM.
Function	Running applications and processes.	storage of firmware.

Examples

DRAM → Dynamic Random Access Memory.

PROM → Programmable read only memory.

Nibble:-

It is a unit of data in computing that consists of 4-bits (half of a byte)

USB (universal serial bus):-

It is a standard interface for connecting peripherals like mouse and keyboard to the computer to transfer data and power supply.

Motherboard:-

It is the main circuit board of the computer. It connects all hardwares to peripherals.

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b- Importance of Pituitary Gland:-

It is often referred to as a master gland. It plays a crucial role in controlling various bodily functions and controlling hormone secretion.

It secretes growth hormone which helps in normal physical development during childhood.

It produces tropic hormones to stimulate and control endocrine glands.

It secretes follicle-stimulating hormone (FSH) and luteinizing hormone (LH). These help in ovulation and reproduction.

It produces anti-diuretic hormone (ADH) which controls water balance by controlling kidney function.

It secretes prolactin responsible for milk production after birth.

It produces adrenocorticotrophic hormone (ACTH) which stimulates adrenal glands to produce cortisol. It helps in managing stress and blood pressure.

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It secretes thyroid-stimulating hormone (TSH) to control the activity of thyroid gland.

It controls body temperature.

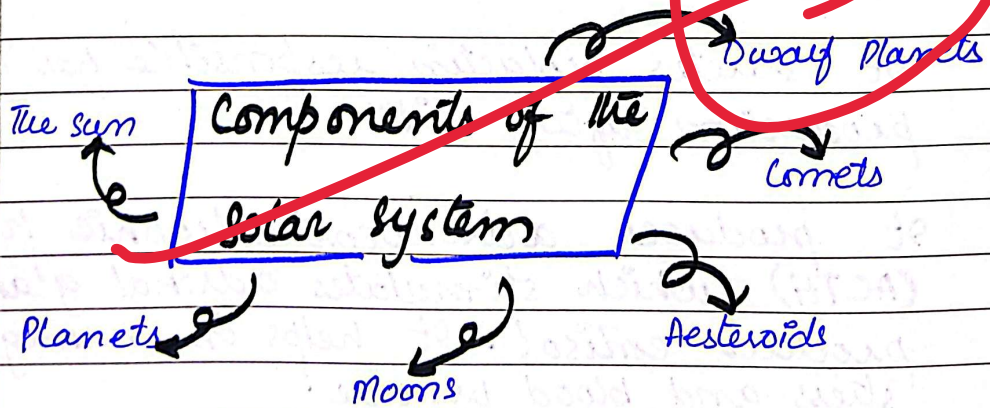
It works as a mediator between hypothalamus and other glands.

The pituitary gland is significant to maintain overall health and well-being of humans. It stimulates growth, reproductive, stress response, metabolism and much more.

a)

SOLAR SYSTEM

The solar system is a vast and dynamic system consisting of sun, planets, moons, asteroids, comets and other celestial bodies.



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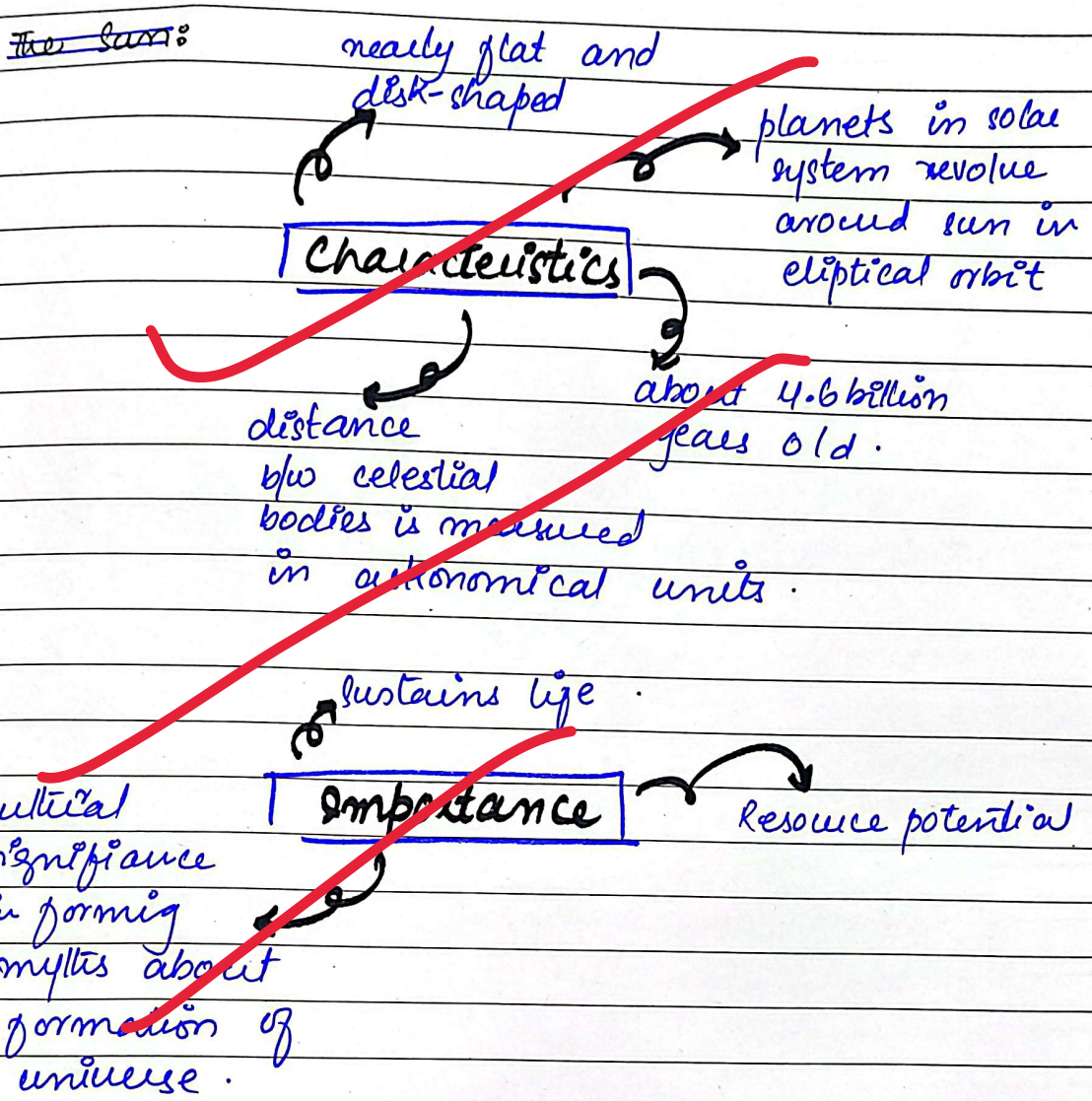
~~The Sun:~~



Attempt maths portion in this pattern
Given data
~~Required~~
~~Solution~~

Paper presentation is good however, keep the length of all answers equal. Need of diagram in pituitary gland question and solar system