Question # 02:-

a.

|	Igneous Rocks	Metamorphic rocks
Definition	These are the types of rocks that form due to solidification of lava and magma.	While these rocks are formed from the transformation of an existing rock type into a new rock type.
Hardness	Comparatively less hard and have no layers	Comparatively hard may or may not have layers
Occurrence	Nearly 95% of the total rocks	Found in a very small percentage
Mineral Content	Made up of two or more minerals.	Usually made up of only one mineral.
Fossils	Have no fossils	Have fossils rarely.
Types	Two:- Intrusive IR Extrusive IR	Two:- Foliated metamorphic rocks. Non-foliated metamorphic rocks.

b.

Phenomenon of Smog:-

Smog is a type of air pollution caused by the combination of smoke, fog, chemical fumes, reducing visibility and posing health issues.

Today, most of the smog we see is photochemical smog. This smog is produced when sunlight reacts with nitrogen oxides and at least one volatile organic compounds (VOCs) in the atmosphere. Nitrogen oxides come from car exhaust, coal, power plants, and factory emissions. VOCs are released from gasoline, paints, and many cleaning solvents. When sunlight hits these chemicals, they form air borne particles and ground level ozone -or- smog (a brown haze above cities). Ozone can be both harmful and helpful. The ozone layer high in the atmosphere protect us from UV rays. But when close to ground, it is bad for human health.
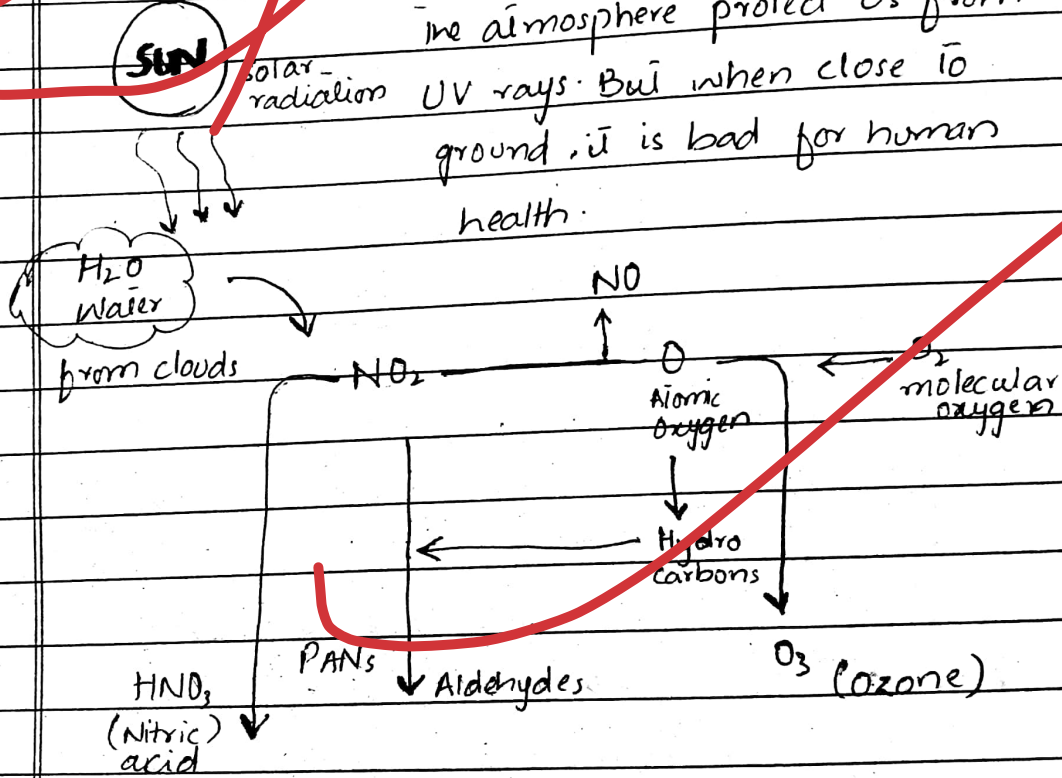
Photochemical Smog.

Types of Smog:-

Smog (on the basis of formation)

Photochemical Smog
(also known as Los
Angeles smog)

Sulfurous Smog
(also known as
London smog)

Sulfurous smog is the result of high concentration of sulfur oxide in the atmosphere. This is usually caused by the burning of fossil fuels and coals.

c.

Risk assessment in DRM

Risk assessment is vital part of disaster risk management (DRM) because it helps to identify and prioritize risks, and guides the development of strategies to reduce them.

Importance:-

Helps in identifying the risks:- Risk assessments help identify the likelihood and magnitude of potential losses as well as the causes and impact of those losses.

Guides strategies:- These help the in guiding the development of strategies to reduce risk such as retrofitting buildings, developing land-use guidelines, and training emergency responders.

Helps allocate resources:- These assessments help administrators allocate resources efficiently to areas that are most vulnerable or at highest risk.

Helps prevent new risks:- These assessments are helpful in preventing new risks by strengthening the resistance and reducing disaster losses.

d.

Short Sightedness:-

It usually occurs when the eyes grow slightly too long. This means that light doesn't focus on light sensitive tissue called retina at the back of eye properly. Insted, the light rays focus just in front of retina, resulting in distant object appearing blurred.

Short-sightedness is also known as myopia.
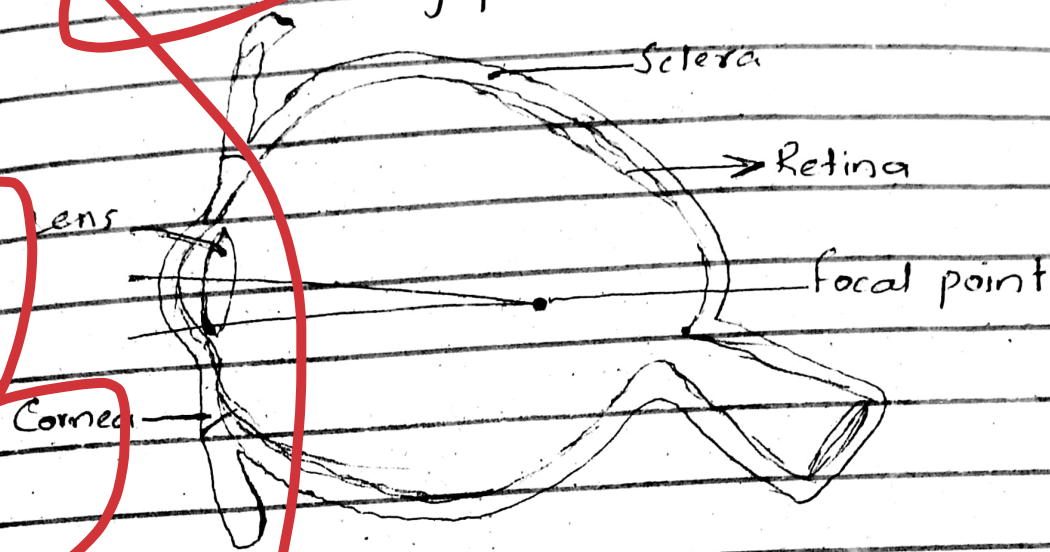
far sightedness:- It occurs when the eyes grow slightly too short and it becomes difficult seeing objects that are close up (like words in book). The shape of eyeball in this condition is too short (front to back). The light rays in this condition focus too far past the retina, resulting in near objects appearing blurred.

Far sightedness is also known as hyperopia.

retina

lens
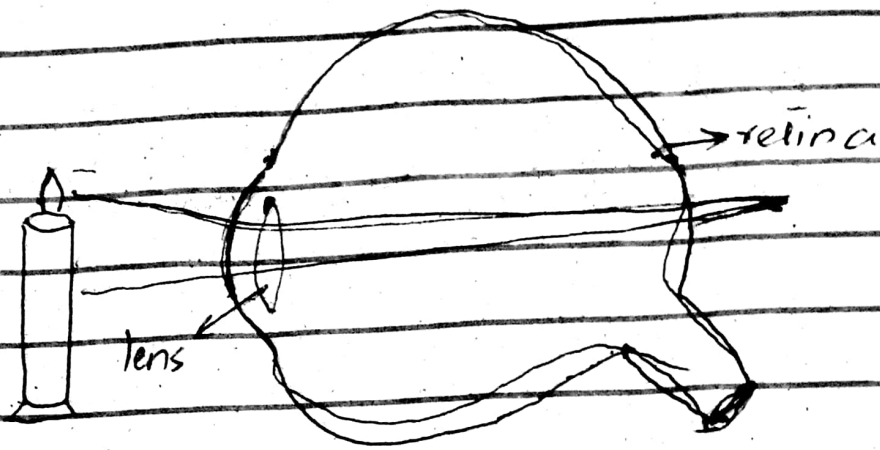
Question # 04:

Solar System

Our solar system consist of eight planets, five dwarf planets, and various smaller bodies like moons, asteroids and comets

Formation:-

The solar system formed approximately 4.6 billion years ago from giant cloud of gas and dust called solar nebula.

key Components:

Sun:- The center of solar system; a massive ball of hot, flowing gas

Planets:- Eight planets including mercury, Mars, Venus, Earth, Jupiter, Uranus, Neptune, Saturn.

Dwarf planets:- Five recognized dwarf planets are Pluto, Eris, Ceres, Humea, Makemake.

Other Components:-

Moons:- natural satellites of earth and many other planets and dwarf planets.

Asteroids:- small rocky objects that orbit the sun.

comets: icy bodies that release gas and dust as they approach the sun

b.
Importance of pituitary gland:-

~~gland is small , pea~~ The pituitary gland is small pea-sized endocrine gland located at the base of the brain. Despite its small size, it plays a vital role in regulating various bodily functions.

→ Hormone regulation:- It acts as a master gland that regulates the production of hormones in other endocrine glands such as thyroid, adrenal glands and gonads (ovaries, testes)

→ Growth and development: During childhood and adolescence it produces growth hormone which regulates the development of human body.

→ Reproductive functions:- It regulates reproductory functions such as puberty, menstruation and fertility, by controlling the production of gonadotropins (FSH and LH)

→ Metabolism and Energy:- By controlling the production of thyroid hormones it helps regulate metabolism and energy levels.

→

c.

RAM	ROM
→ Random access memory	→ Read only memory.
→ Volatile memory Losses data when power is turned off.	→ non-volatile memory retains data even when power is turned off.
→ Temporary storage Holds data while computer is running.	→ Permanent storage holds firmware or software that doesn't need to be changed.
→ Fast access Allows quick access and modification of data.	→ Slow access Data can only be read not modified.

Nibble:- A nibble is a unit of digital information that represents 4 binary digits (bits). It is half of a byte (8 bits). These are often used to represent hexadecimal numbers.

USB:- It is a standard interface for connecting devices to a computer. It allows for the transfer of data, power, and control signals between devices.

Motherboard:- This is the main circuit board of a computer that connects and supports all the hardware components. It contains sockets for the CPU, memory and other components as well as circuitry for power delivery, storage input output operations.

d.

The goal to limit the average global temperature rise to 1.5°C above pre-industrial levels is ambitious and necessary to mitigate the worst impacts of climate change. Achieving this goal ~~will~~ requires significant reduction in greenhouse gas emission as well as concerted efforts from countries around the world to transition to renewable energy sources, increase energy efficiency, and protect natural carbon sinks like forests.

The Paris Agreement framework for countries to submit their Nationally Determined Contributions (NDCs) is a crucial step towards achieving this goal.

$$x = \frac{20-21}{7}$$

Section B

Question # 7.

a.

Let the number be

$$x, \quad x+1, \quad x+2, \quad x+3, \quad x+4, \quad x+5, \quad x+6$$

As per given condition:

$$\frac{\text{sum of 7 numbers}}{7} = 20$$

$$\frac{x+x+1+x+2+x+3+x+4+x+5+x+6}{7} = 20$$

$$\frac{7x+21}{7} = 20$$

$$\frac{7(x+3)}{7} = 20$$

$$x+3 = 20$$

$$x = 20-3$$

$$\boxed{x = 17}$$

putting values in above eq.

$$= \frac{17 + (17+1) + (17+2) + (17+3) + (17+4) + (17+5) + (17+6)}{7}$$

$$= \frac{140}{7}$$

$$= 20 \quad \text{Ans.}$$

So the largest no
is 23.

b.

A. Told B

C = nephew of A's father

D czn of A

A czn of C but not brother of D

Since both D and C are A's cousin then C and D are cousins of each other as well.

c. Missing sequence.

(i) 4, 18, 50, 100, 180, 294, 448

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

(iv) 13, 24, 46, 90, 178, 384

(v) 4, 16, 144, 400, 900, 1764

(iii) 11, 17, 39, 85, 189

Question # 08.

a.

Distance from Ali's feet to tree = 10m

"   "   " eyes   " ground = 1·5 m

"   "   "   "   " top of tree = 15m

Height of tree = 15 - 1·5

$$= 13.5 \, m$$

Height of tree ÷ 10

$$=$$

Question # 8

a. let, the height of tree be "h"

Using Pythagorean theorem

$$h^2 = a^2 + b^2$$

$$h^2 = p^2 + 10^2$$

Distance from Ali's feet to tree = b = 10m

"   "   "   " eyes " top of tree = h = 15m

height of tree is "p"

$$15^2 = p^2 + 10^2$$

$$225 = p^2 + 100$$

$$225 - 100 = p^2$$

$$125 = p^2 \qquad \sqrt{125} = \sqrt{p}$$

$$\boxed{11.18 = p}$$

adding 1.5m in p to get total height

of tree

$$h = 11.18 + 1.5 \, m$$

$$h = 12.68 m$$

b.

CONSCIENTIOUS
LUDICROUS
PRESSURE
COMPLAIN
PRESSURE

c. Hexagon : 6 lines of symmetry.
Lines of symmetry pass through
opposite vertices or midpoints of
opposite sides.

Octagon: 8 lines of symmetry
pass through opposite vertices

Circle: has infinites lines of
symmetry.

d. Volume of pyramid

$$V = \frac{1}{3} \text{ Base Area} \times \text{Height}$$

Given,
length of base = 7cm
width of base = 5cm
height of pyramid: 10cm
Base Area =
L × W
7 × 5
35 cm²

$$V = \frac{1}{3} \times 35\,cm^2 \times 10\,cm$$

$$= \frac{350}{3}$$

$$= 116.67\,cm^3.$$

Volume of pyramid is $116.67\,cm^3$.