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Final Mock  
General Science & Ability

Part II  
(Section - A)  
Q No 2

(a) Differentiate b/w igneous rocks & metamorphic rocks.

Difference between igneous rocks and metamorphic rock is illustrated in table as follows

Aspect	Igneous Rock	Metamorphic Rock
1. Formation	Formed by solidification and cooling of molten magma.	Formed from the formation of existing rocks (igneous, sedimentary, metamorphic) under heat, pressure and chemical processes.
2. Origin	Primary Rock (Formed directly by from magma)	Secondary Rock (formed by alteration of pre-existing rocks).
3. Texture	Can be coarse-grained and fine	Typically have foliated (layered)

		grained.	or non-foliated textures.
4	<b>Examples</b>	Granite, basalt, obsidian	Marble, schist, gneiss.
5	<b>Mineral Composition</b>	Depends on the type of magma; can include quartz, feldspar, mica etc	May contain minerals recrystallized under pressure, such as Garnet, Chlorite or staurolite.
6	<b>Process</b>	Involves cooling and crystallization.	Involves heat, pressure and chemical reactions.
7	<b>Occurrence</b>	Found near volcanic regions and plate tectonic boundaries.	Found in region with high tectonic activity such as mountain ranges.
8	<b>Appearance</b>	Often glassy or crystalline	May have a banded or distorted appearance due to pressure
9	<b>Hardness</b>	Generally hard and durable	Can vary, often harder than their parent rocks.

b. Explain the phenomenon of smog and give its types.

### Phenomenon of Smog:

Smog is a type of air pollution that results from the interaction of sunlight with pollutants in the atmosphere. It primarily consist of ground-level ozone,

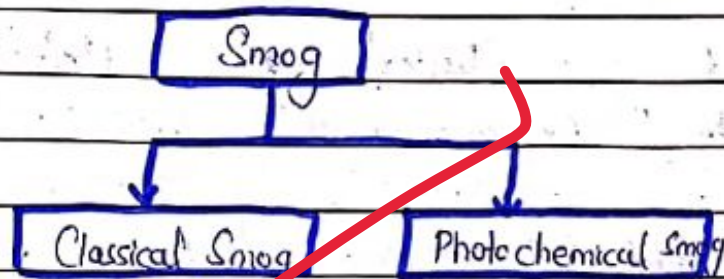
particulate matter, and other chemical pollutants.

The term "smog" is a combination of "smoke" and "fog", reflecting its thick and hazy appearance.

Smog forms when pollutants like nitrogen oxides ( $\text{NO}_x$ ) and volatile organic compounds (VOCs) emitted from vehicles, industrial processes react in presence of sunlight.

### Types of Smog:

There are two types of smog:



#### 1. Classical Smog:

##### • Characteristics:

1. It occurs in cool, humid climates.
2. It is composed of sulfur dioxide ( $\text{SO}_2$ ), particulate matter and moisture.
3. Appears as a dense, grayish fog.

##### • Formation:

Results from the burning of fossil fuels like coal, which releases sulfur compounds.

##### • Health Effects:

Cause respiratory issues and irritation of the eyes.

#### 2. Photochemical Smog:

##### • Characteristics:

1. It occurs in warm, sunny climates.

2. It is composed of ozone, nitrogen oxides, and VOCs.

3. It appears as a brownish haze.

**• Formation:**

Forms when sunlight interacts with pollutants from vehicles and industrial emission.

**• Health Effects:**

Causes respiratory problems, eye irritation and reduces visibility.

**Difference b.w two types**

Aspect	Classical Smog	Photochemical smog
• Climate	Cool and humid conditions.	Warm and sunny conditions.
• Main Pollutants	Sulfur dioxide, particulate matter.	Ozone, nitrogen oxides, VOCs.
• Appearance	Grayish haze	Brownish haze
• Cause	Burning of coal and fossil fuels.	Reaction of pollutants under the sunlight.

**(c) Give the importance of Risk assessment in DRM.**

**Importance of Risk Assessment in DRM.**

Risk assessment is a critical component of Disaster Risk Management (DRM). It helps to identify, analyze and evaluate potential hazards and their impacts.

Its importance includes

1. Identifying hazards

2. ~~Understanding Vulnerabilities~~

3. ~~Prioritizing Risks~~

4. ~~Enhancing Preparedness~~

5. ~~Reducing Losses~~

6. ~~Improved Resilience~~

7. ~~Guiding Policy and Planning~~

8. ~~Facilitating Collaboration~~

1. **Identifying Hazards:**

It helps to understand the types of disasters (natural or man-made) that might occur in the region.

2. **Understanding Vulnerabilities:**

Assess the exposure of people, infrastructure and ecosystem of hazards.

3. **Prioritizing Risks:**

Enables decision makers to focus on the most significant and likely risks for effective resource allocation.

4. **Enhancing Preparedness:**

Informs the development of early warning systems, evacuation plans and community awareness programs.

5. **Reducing Losses:**

Helps design mitigation measures to minimize economic, social, and environmental damages.

## 6. Improving Resilience

Supports communities in building adaptive capacities and reducing susceptibility to disasters.

## 7. Guiding Policy and Planning

Provides data-driven insights for sustainable urban planning, land-use policies and disaster recovery strategies.

## 8. Facilitating Collaboration

Encourage coordination among government, NGOs, and communities by providing clear understanding of risks.

## (d) Explain short and far sightedness.

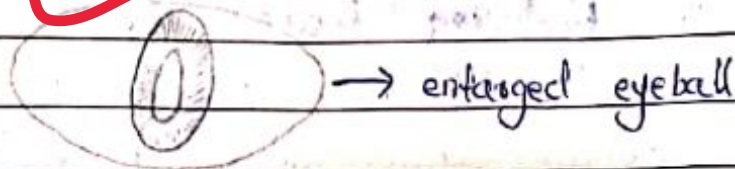
### • Short Sightedness (Myopia)

**Definition:** A vision condition where close objects are seen clearly, but distant objects appear blurry.

**Cause:** The eyeball is too long, or the cornea is too curved, causing light to focus in front of the retina instead of on it.

**Symptoms:** Difficulty seeing distant objects, squinting and eye strain.

**Correction:** Concave lenses (glasses or contact lenses) or corrective surgeries like LASIK.



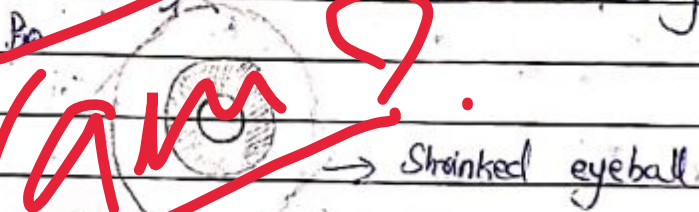
## • Far Sightedness (Hypermetropia)

**Definition:** A vision condition where distant objects are seen clearly, but close objects appear blurry.

**Cause:** The 'eyeball' is too short, as the cornea is not curved enough, causing light to focus behind the retina instead of on it.

**Symptoms:** Difficulty focusing on close objects, eye strain and headaches.

**Correction:** Convex lenses (glasses or contact lenses) or corrective eye surgeries.



Both conditions can also occur due to age (e.g. Presbyopia) and can significantly impact daily activities if untreated.

### Q no 4

a. Write a note on solar system.

#### Solar System:

The solar system is a gravitationally bound system consisting of the sun and the celestial objects that orbit it. It is located in the milky way galaxy in Orion Spars arm... It was found

approx 4.6 billion years ago.

## Components of Solar System:

1. The Sun

2. Planets

3. Dwarf Planets

4. Moon

5. Asteroids

6. Comets

7. Meteoroids

8. Kuiper belt or Oort cloud.

### 1. The Sun:

- A massive ball of hot, glowing gases (plasma) at the center of solar system.
- It provides light, heat, driving life and weather on Earth.

### 2. Planets:

- It consist of planets that are further divided in types:

1. Terrestrial Planets: Mercury, Venus, Earth and Mars - (rocky & dense)

2. Gas Giants: Jupiter and Saturn (made of hydrogen and helium)

3. Ice Giants: Uranus and Neptune (contains heavier elements like water, ammonia and methane).

### 3. Dwarf Planets:



Pluto, Eris, Haumea, Makemake and Ceres. (smaller and lack gravitational dominance of planets)

#### 4. Moons:

Natural satellite orbiting planets e.g. Earth's Moon, Jupiter's Europa, and Saturn's Titan.

#### 5. Asteroids:

Rocky objects, mainly found in the Asteroid Belt between Mars and Jupiter.

#### 6. Comets:

Icy bodies that release gas and dust, forming a glowing tail when near the sun.

#### 7. Meteoroids:

Small rocky or metallic fragment that can enter Earth's atmosphere, appearing as meteors.

#### 8. Kuiper Belt or Oort Cloud:

Regions beyond Neptune containing icy bodies and potential comets.

(b). Give the importance of pituitary gland.

#### Importance of Pituitary Gland:

The pituitary gland is also called as "Master Gland". It plays critical role in regulating various bodily functions by controlling hormone production. Located at the base of brain.

## Key Roles:

1. Regulates Growth

2. Manage water balance

3. Promotes Production

4. Influences Metabolism

5. Respond to stress

6. Regulates Blood pressure

### 1. Regulates Growth:

Produces growth hormone (GH), essential for the physical development and cellular regeneration.

### 2. Manage Water Balance:

Releases antidiuretic hormone (ADH), which controls water retention in kidneys.

### 3. Promotes Production:

Produces hormones like prolactin (for milk production) and luteinizing hormone (LH) for ovulation and testosterone production.

### 4. Influences Metabolism:

Produces hormone like thyroid stimulating hormone (TSH), which regulates metabolic rate and energy balance.

### 5. Respond to stress:

Stimulates the adrenal glands to

produce cortisol, which manages stress and energy.

## 7. Regulates Blood Pressure:

ADH and other hormones indirectly influence blood pressure by controlling fluid levels and vascular tone.

The pituitary gland ensures the body maintains homeostasis, growth, and stress response. Its dysfunction can lead to serious health issues. It emphasizes on the role of in overall well-being.

(c) Differentiate RAM & ROM; also define terms Nibble, USB and mother board.

Differentiate b/w RAM & ROM

Aspect	RAM	ROM
1. Definition.	RAM is temporary memory that stores data and instructions for active processes.	ROM is permanent memory that stores instructions and data for system boot and other functions.
2. Volatility	Volatile (Data is lost when power is turned off).	Non-Volatile (Data is retained even without power)
3. Purpose	Enable fast read/write operation	Stores firmware or permanent instructions

	running application.	BIOS
4. <b>Modifiability</b>	Data can be modified	Data is usually pre-written and not easily modified.
5. <b>Speed</b>	Faster than ROM for data access.	Slower compared to RAM
6. <b>Examples:</b>	DDR4, SDRAM, LPDDR.	EEPROM, PROM, flash memory.

### Definitions:

**Term**  
**Nibble**

**Definition:**

A unit of digital information equal to 4 bits or half a byte.

**USB**

Universal Serial Bus. A standard interface for connecting peripheral devices to computer enabling data transfer and power supply.

**Motherboard**

The main circuit board in a computer that connects the CPU, RAM, storage and other hardware components, enabling them to work together.

(b) COP-29 targets to limit temperature rise upto 1.5°C. Comment.

COP-29 target for limiting global temperature rise to 1.5°C above pre-industrial levels, align with the goals of Paris Agreement. There are some key targets

## of COP 29 Key Points of COP-29 Targets:

1. Emission Reduction
2. Renewable Energy Transition
3. Financial Commitments
4. Global Cooperation

### 1. Emission Reduction:

In COP-29, calls for cuts in greenhouse gas emissions, particularly from major emitters, to stay within carbon budget for 1.5°C.

### 2. Renewable Energy Transition:

Emphasizes accelerating the shift from fossil fuels to renewable energy resources.

### 3. Financial Commitment:

Developed countries would provide adequate climate financing to underdeveloped countries to support climate mitigation strategies.

### 4. Global Cooperation:

Stresses the need for collective action, equity and technology sharing to achieve the target.

### Significance of 1.5°C Target:

It prevent catastrophic climate impacts, particularly for vulnerable communities.

- It protects ecosystems and reduces

the risk of irreversible tipping points.

Achieving this target requires urgent global action, robust policies and consistent accountability from all nations.

### (Section - B)

Q no 8

d. If the base of the pyramid is rectangle having length is 7cm and the width is 5cm and height of the pyramid is 10cm, then find its volume.

Solution:

Base of pyramid is Rectangle

Area of Rectangle = length  $\times$  width

length = 7cm

width = 5cm

$$\begin{aligned} \text{(base Area) / Area of rectangle} &= l \times w \\ &= 7 \times 5 \\ &= 35 \end{aligned}$$

As we know that:

Volume of Pyramid =  $\frac{1}{2}$  (base area

$\times$  height) p.w

$$= \frac{1}{2} (35 \times 10)$$

$$= \frac{1}{2} (350)$$

$$= \frac{350}{2}$$

$$= 175$$

$$= 175$$

$$\begin{array}{r} 35 \\ \times 10 \\ \hline 350 \\ \hline \end{array}$$

$$x (\text{Volume of pyramid} = 175)$$

$$= \frac{1}{3} (\text{base area} \times \text{height})$$

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

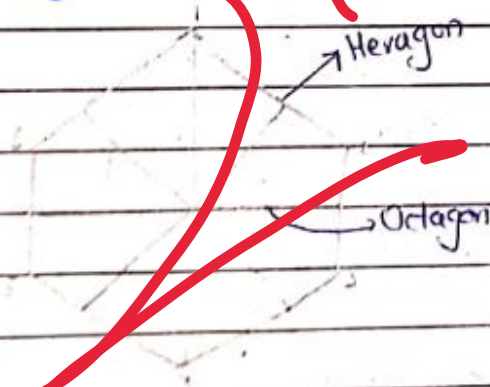
$$= \frac{350}{3}$$

$$\begin{array}{r} \text{P.W} \\ \hline 116.6 \\ 3 \overline{) 350} \\ \underline{348} \\ 20 \\ \underline{18} \\ 20 \\ \dots \end{array}$$

$$\text{Volume} = 116.67 \text{ cm}^3$$

(C) Draw and write the total number of lines of symmetry in a regular hexagon and octagon. How many lines of symmetry are there in circle?

Diagram



The diagram above shows the lines of symmetry for three shapes.

1. Hexagon. 6 lines of symmetry
2. Octagon. 8 lines of symmetry
3. Circle. An infinite number of lines

of symmetry, as every diameter of a circle acts as a line of symmetry.

(a) Ali is standing 10 meters away from a tree. Find height of the tree.

Solution:

height of tree =  $h$

Distance of Ali's feet to tree = 10 meters

Distance from Ali's eyes to the top of the tree = 15 meters

Height of Ali's eyes from the ground = 1.5 meters.

As we know:

$$\frac{\text{height of tree}}{\text{distance from tree to Ali's feet}} = \frac{\text{distance from Ali's eyes to top of tree}}{\text{distance from Ali's eyes to tree}}$$

$$\frac{h}{10} = \frac{15}{1.5}$$

$$h = 10 \times \frac{15}{1.5}$$

$$h = 10 \times \frac{15}{1.5}$$

$$h = 10 \times 10$$

$$h = 100 \text{ meters.}$$

Keep relevancy

Draw clear diagrams

Keep balance in answers