

Dos and Don'ts for General Science & Ability Paper

Hi there, you've done well. Know that acquiring knowledge is one thing and reproducing it in paper according to what's asked is another. There are a few things I would like to highlight.

1. A 5 marks part requires at least 2 and at max 3 sides of a paper. Know that there can be two or three parts of a question and their marks are divided accordingly. So, address all of them in a just manner.

2. Focus on time management. You get 35 minutes to solve one question and about 8 minutes per 5 mark part. Manage your time accordingly.

3. You need to understand that your paper is supposed to look more scientific than theoretical. So, add flowcharts and diagrams where required.

4. Your handwriting and neatness can be really impactful. Avoid cutting and overwriting.

5. Focus on your spellings and your grammar. Here, in GSA there's no deduction in marks but your expression will definitely create an impact.

6. In ability portion, give explanation for analytical ability question in words.

You need to understand that a 5 mark part requires all steps written and explained.

Good luck for CSS 2025. You're gonna rock in sha Allah. :)

- 1 Mitochondria produce energy through the process of oxidative phosphorylation.
- 2 It regulates the metabolic activity of the cell.
- 3 It controls the growth of new cells and cell multiplication.
- 4 Helps in detoxifying ammonia in the liver cells.
- 5 It plays an important role in apoptosis or programmed cell death.
- 6 It is a producer of testosterone and oestrogen.
- 7 It is involved in cellular activities, control cell cycle and cell growth.

How is the Mitochondria a power house?

The 'Mitochondria' is the powerhouse of the cell. It is where aerobic cellular respiration and ATP synthesis take place. It is called as the power house of the cell because of its site of producing ATP which is used to perform all of the functions.

Date: _____

Day: _____

of the Cell
ATP Producer means energy producer.

ATP $\longleftrightarrow$ energy $\longleftrightarrow$ Power house of the cell
to all work



Qd What are Covalent bonds?
Explain types along with elaborating structures.

Covalent Bonds:-

Covalent Bond is a bond formed by sharing of electrons between two atoms. This bonding is called a **Shared pair or bonding pair** - Covalent Bond is also referred as **molecular bonds**.

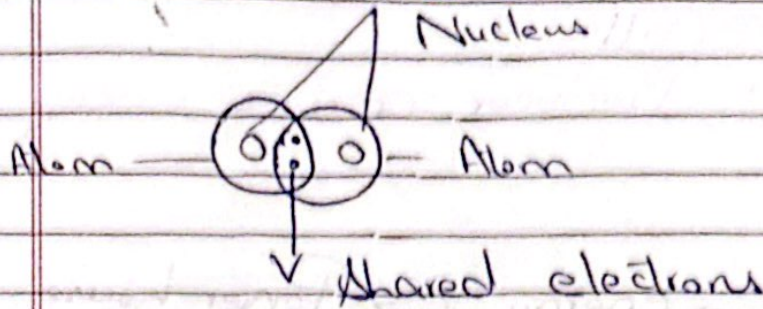
Why atoms bond together:-

The purpose of Covalent bonding is to assure stability of atoms. Sharing of $\downarrow$ electrons occur to stabilize atoms. They themselves share electrons to achieve the state of stability.

Formation of Covalent Bond:-

Date: _____

Day: _____



Sharing of Electrons between Same type of Atoms:-

Sharing of electrons can occur between the same type of atoms.

Example:-

Hydrogen H_2
 Cl_2 ← Chlorine
 O_2 ← Oxygen

Sharing between different kinds of Atoms:-

Sharing of electrons between different kinds of atoms can also occur.

Example:-

CH_4 , H_2O , NH_3

Methane Water Ammonia

Explain - types along with Elaborating structures

Depending upon the number of shared electron pairs, the Covalent Bond can be classified into

Date: _____

Day: _____

Single Covalent Bond
 Double Covalent Bond
 Triple Covalent Bond

⇒ Single Covalent Bond:

A Single Bond is formed when only one pair of electrons is shared between the two participating atoms. It is sharing of one pair of electron.

Representation:-

It is represented by one dash (-).

Density:-

It has small density than double and triple bond.

Stability:-

It is the most stable.

Example.

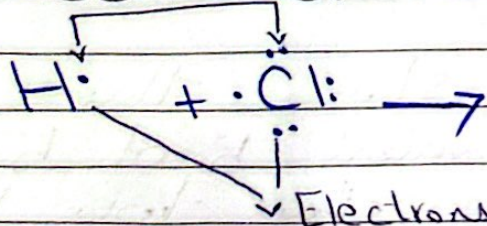
HCl

Shared one electron pair

Structure :-

Lewis Symbols used to denote electrons

Represent sharing of electron



Explanation:-

HCl molecule has one hydrogen atom with one valence electron and one chlorine atom with seven valence electrons.

Result:-

Single Bond is formed between hydrogen and chlorine,

$$\text{H} - \text{Cl}:$$

⇒ Double Bond:-

A double bond is formed when two pairs of electrons are shared between the two participating atoms.

Representation:-

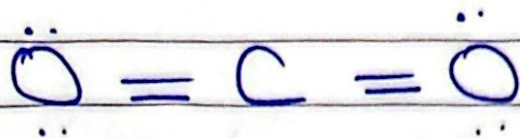
It is represented by two dashes (=)

Stability:-

Much stronger than single bonds but less stable than triple bond.

Stable:-

less stable than single covalent bond but more than triple bond.

Example :-Carbon dioxide CO_2 Structure :-

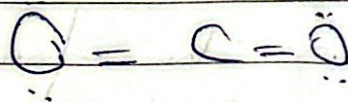
CO_2 molecule with double
Covalent Bond

Explanation:-

To make itself stable
or to complete the octet,
Carbon shares -two of its valence
electrons with one oxygen
atom. Each atom ^{of oxygen} share its
-two electrons with Carbon,
and therefore there are
-two double bonds in CO_2 .

Result:-

Double bond is formed.

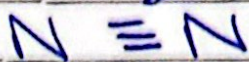
* Triple Bond:-

Triple Bond is formed

When -three pairs of
electrons are shared between
the -two participating atoms

Representation:-

Triple bonds are represented by three dashes

Density:-

More dense.

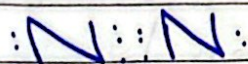
Stability:-

It is the less stable type.

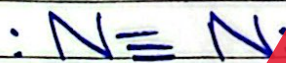
Example:-

Formation of a nitrogen molecule.

Nitrogen molecule

Structure:-

or

Explanation:-

In the formation of a nitrogen molecule, each nitrogen atom having five valence electrons provides three electrons to form three electron pairs for sharing.

Result:-

Nitrogen molecule with
triple bond formed.

←

Q3 a)

What is lunar eclipse? Explain in detail with apt diagram.

Lunar Eclipse:-

An astronomical phenomenon when the moon passes through the shadow of the earth which can only occur during a full moon it is known as lunar eclipse.

Colour of the lunar Eclipse:-

The colour of the lunar eclipse is reddish:-

Reason behind Reddish Colour:-

Reddish colour is because of the sunlight bending through the atmosphere.

Condition for the lunar Eclipse:-

Lunar eclipse can happen only when the

Date: _____

Day: _____

night is the full moon.
Full Moon:

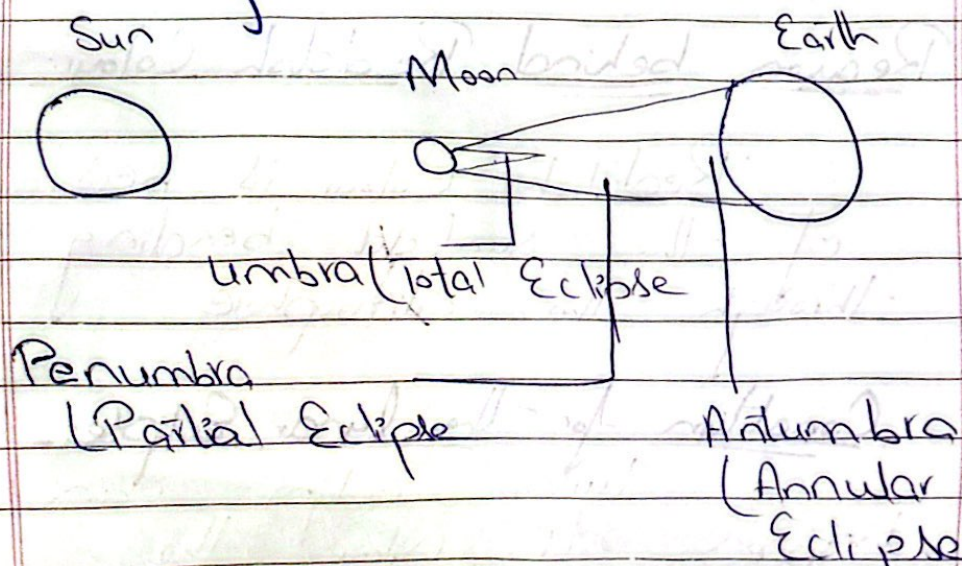
Lunar eclipses can happen only when the Moon is opposite the Sun in the sky, monthly occurrence known as the full moon.

Lunar Eclipse not possible every month:

Lunar Eclipses don't occur every month with full moon because the Moon's orbit is tilted 5 degrees from the Earth's orbit around the Sun, so most of the time the Moon passes above or below the shadow.

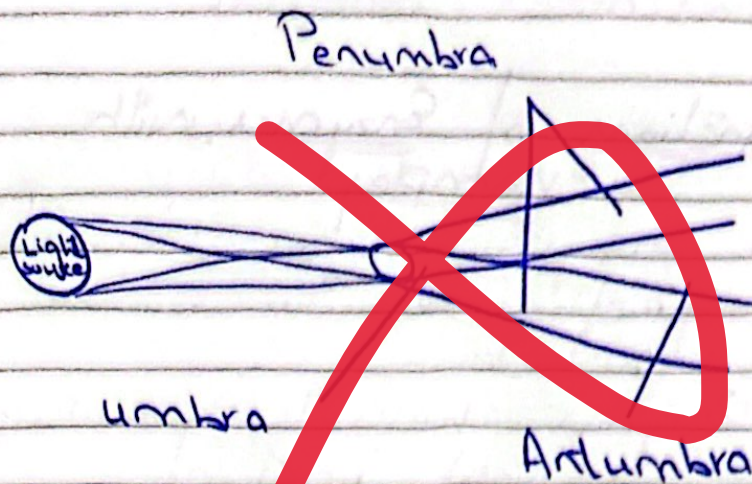
Detail with help of example and diagram:

Diagram:



Date: _____

Day: _____



Types of Lunar Eclipses:

Total lunar Eclipse:-

A total lunar eclipse occurs when the Moon and Sun are on the exact opposite side of the Earth.

Partial lunar Eclipse:-

A partial lunar eclipse is that it happens when only a part of the Moon enters the Earth's shadow.



Q6) Explain functions of enzymes in details with examples.

Enzymes:-

"Enzymes can be defined as biological polymers that catalyze

biochemical reactions.

Function of Enzymes: with examples.

The enzyme perform a number of functions in our bodies. These include:-

1 Enzymes help to speed up the chemical reactions.

2 Enzymes help in the signal transduction.

Example of signal transduction:-

Protein Kinase - that catalyzes the phosphorylation of proteins.

3 Break down Food:-

Enzymes break down large molecules into smaller substances that can be easily absorbed by the body.

example:-

Pepsin is a stomach enzyme serves to digest Protein.

4 Energy generators:-

Enzymes help in generating energy in the body.

Example:-

ATP Synthase is the enzyme involved in the synthesis of energy.

Date: _____

Day: _____

5

Help in the movement of ions

Enzymes are responsible for the movement of ions across the plasma membrane.

Example:

Carrier lipase help in lipid movement.

6

Help in Biochemical reactions.

Enzymes perform a number of biochemical reactions, including oxidation, reduction, hydrolysis, etc. to eliminate the non-nutritive substances from the body.

Examples:

Some main categories of enzymes used in biochemical reactions

Oxidoreductases

Transferases

Hydrolases

Lyases

Isomerases

Ligases.

Each carry out the biochemical reactions.

7

Act as Internal structure Regulator

Enzymes function - to reorganize
 - the internal structure of
 - the cell to regulate
 cellular activities.

Examples:

Zymogen act as
 a regulator.



Q No 4 a) What is noise pollution?
 Give its harmful effects
 and ways to curb.

Noise Pollution:

Noise pollution is
 - the unpleasant and undesirable
 irritating sound which leads
 - to discomfort in human
 beings.

Intensity of Sound:

Intensity of sound is
 measured in decibels (dB)

- faintest sound
 - that human
 can hear - 1 DB

Harmful effects of Noise Pollution:

Harmful effects of noise pollution are as follows:

Hypertension

Hypertension is a result of noise pollution, which is caused due to elevated blood levels for a longer duration.

Hearing loss:-

One can have the issues of hearing due to noise pollution.

Sleeping disorders:-

Lack of sleep might result in fatigue and low energy level throughout the day affecting everyday activities.

Cardiovascular issues:-

Noise pollution causes heart related problems such as - the blood pressure level, stress. It is the result of the noise pollution -

Date: _____

Day: _____

Way to Curb Noise Pollution:

Noise pollution can be curb through the following -

Ban Honking in Public Places:

like institutes, hospitals, parks

Install Soundproof Systems:

Install soundproof systems especially in hospitals and industries,

Ban Musical Instruments:

Control to desirable limit

Aforestation

forests or Dense tree

Cover can be useful

Shield Explosives

Shield banned to be used

in forests, mountains

and mining areas.



Q No 8

(a) Brain is a window cleaner

Solution

Given

Charge = £ 20 + 4n

put n = 7

$$\text{Charge} = £ 20 + 4(7)$$

$$\text{Charge} = £ 20 + 28$$

$$= £ 48$$

Brain charge £ 48 to his Customer

(b)

-find out -the correct words -from given

i) raciep

raciep

ii) tyhniaum

humanity

iii

Search

iv

Annihole

v)

le phra

Verify $(A \cup B)' = A' \cap B'$

Solution: -

$$\text{L.H.S} = (A \cup B)'$$

$$\text{L.H.S} = U - (A \cup B)$$

Putting values we get

$$\text{L.H.S} = \{10, 11, 12, 13, 14, 15, 16, 18\} - (\{10, 11, 12, 13, 15\} \cup \{10, 12, 14\})$$

$$\text{L.H.S} = \{10, 11, 12, 13, 14, 15, 16, 18\} - \{10, 11, 12, 13, 14, 15\}$$

$$\text{L.H.S} = \{16, 18\} \quad \text{--- (1)}$$

Now

$$\text{R.H.S} = A' \cap B'$$

$$\text{R.H.S} = (U - A) \cap (U - B)$$

Putting values we get -

$$\text{R.H.S} = \{10, 11, 12, 13, 14, 15, 16, 18\} - \{10, 11, 12, 13\}$$

$$\cap \{10, 11, 12, 13, 14, 15, 16, 18\} - \{10, 12, 14\}$$

$$\text{R.H.S} = \{14, 16, 18\} \cap \{11, 13, 15, 16, 18\}$$

$$\text{R.H.S} = \{16, 18\} \quad \text{--- (2)}$$

Hence from 1 & 2

L.H.S = R.H.S
verified.

find - the number of triangle

$$\begin{aligned}\text{Total no of triangle} &= 8 + 10 + 6 \\ &= 24 \text{ Ans.}\end{aligned}$$

Q No 6

Determine the value of K.
if the arithmetic solution.

To find K = ?

Calculation

We know that
Arithmetic mean = $\frac{\text{Sum of all observations}}{\text{no of observation}}$
putting values we get.

$$15 = \frac{9 + 8 + 10 + K + 12}{5}$$

Multiplying 5 on both sides

$$5 \times 15 = \frac{9 + 8 + 10 + K + 12}{5} \times 5$$

$$75 = 9 + 8 + 10 + K + 12$$

$$K = 75 - 39$$

$$\boxed{K = 36}$$

1d)

Given a series $-10, -8, +6, 40,$
 $102?$

Solution

$$-10 + 2 = -8$$

$$-8 + 14 = 6$$

$$6 + 34 = 40$$

$$40 + 62 = 102$$

$$102 + 92 = 200$$

Question mark is 200

