

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

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Symptoms of Dengue:

- High fever
- Severe headache
- Nausea and vomiting
- Pain behind the eyes
- Severe joint and muscle pain
- Mild Bleeding
- Fatigue

Give early, critical,
recovery symptoms

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Q.no: (B)

Dark matter and dark energy are two of the most mysterious and fundamental components of the universe, making up about 95% of it. Yet, they are unlike anything we can see or directly observe.

→ **Dark Matter:** It is a form of matter that does not emit, absorb or reflect light, making it invisible and detectable only through its gravitational effects on visible matter such as stars and galaxies.

• Evidence of Dark Matter:

Observations of galaxies and galaxy clusters reveal that there is not enough visible matter to account for the observed gravitational effects. For instance; stars in galaxies orbit at speeds that cannot be explained by visible matter alone — there must be additional "hidden" mass providing gravitational pull.

→ **Dark Energy:** It is an unknown energy form that makes up about 68% of the universe. It is believed to be responsible for the accelerated expansion of the universe, pushing galaxies away from each other at an increasing rate.

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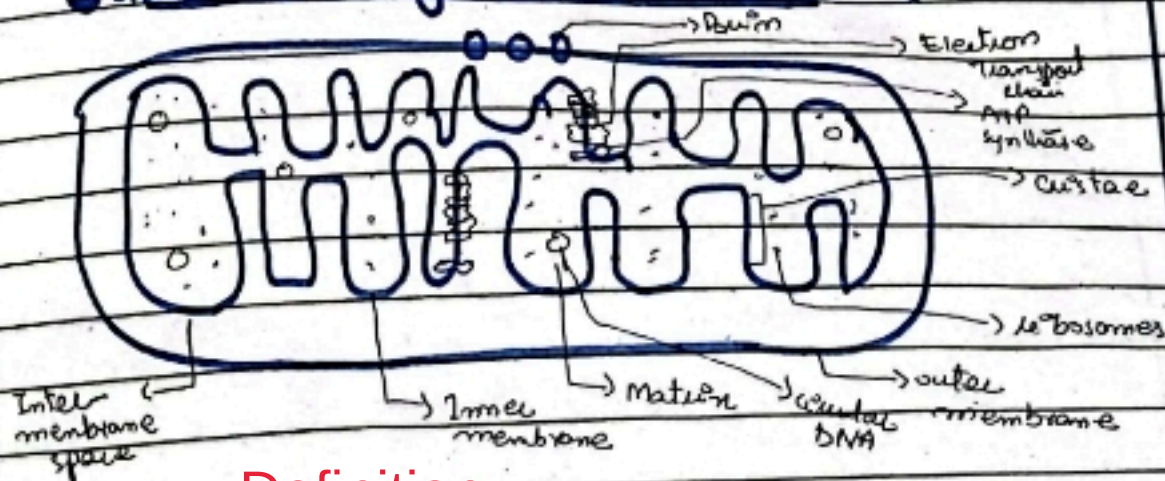
* Evidence for Dark Energy:

In the late 1990s, astronomers discovered that distant galaxies were moving away from us faster than expected, suggesting that some unknown force is causing the expansion of the universe to speed up.

Conclusion: Dark matter is primarily responsible for the gravitational "glue" that helps hold galaxies and larger structures together. whereas, Dark Energy works in the opposite way, pushing everything apart and accelerating the expansion of the universe.

emixio?

Q. No. 2 (C)

Structure of Mitochondria:Definition

Mitochondria is made-up of two membranes, an inner membrane and an outer membrane. The inner membrane is folded to create cristae. The most of the organelles of mitochondria are located inside the inner membrane the inner region called as matrix (mitochondrial matrix).

∴ Functions of Mitochondria:

The main function of mitochondria is to produce the chemical energy that required to fuel biochemical reactions in the cell. Through a series of chemical reactions, mitochondria break down glucose into an energy molecule known as adenosine triphosphate (ATP), which is used to fuel various other cellular processes.

Proper account of functions is required

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* Mitochondria as the Power house of cell:

The proteins synthesized by the proteins in mitochondria are utilized to generate Adenosine Triphosphate (ATP) from the food.

This ATP acts as the energy currency of the cell, because of which the whole cell and body get energy. Thus, mitochondria are called the powerhouse of the cell.

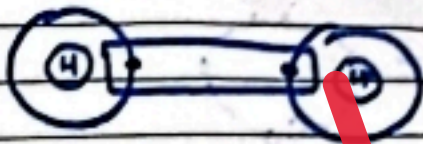
Q.No. 2. (D)

Covalent Bonds: It is a bond which is formed by the "mutual sharing" of electrons between the atoms.

* Types of Covalent Bond:

There are three types of covalent bonds: Single covalent bond, Double covalent bond, Triple covalent bond. These three are based on the number of shared electron pairs.

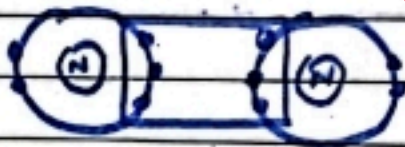
Single Bond

Hydrogen (H_2)

Double Bond

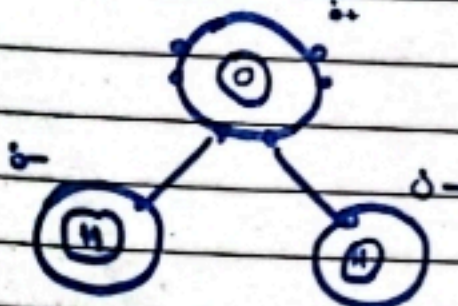
Oxygen molecule (O_2)

Triple Bond

Nitrogen (N_2)

Also, there are a type of covalent bond based on the polarity and coordination of the atoms, that are: Polar Bond, Nonpolar Bond, Coordinate Bond

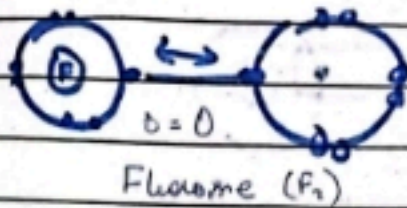
Polar Bond

Water (H_2O)

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Nonpolar Bond



Coordinate Bond



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SECTION - I

Q.No.6

(a) Arithmetic mean of:

9, 8, 10, k, 12 is 15.

Value of k?

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

5

$$\text{Arithmetic mean} = \frac{\sum x}{n}$$

The value of k would be 36.

$$\frac{9 + 8 + 10 + 36 + 12}{5} = 15 \Rightarrow 75 = 45$$

$$k = 36$$

Q.No.6

(b)

Ratio: 4:3

Added quantity: 10 litres of coloured water

new ratio: 4:5

Initial quantity = ?

Initial ratio: $4x$ and $3x$

Added quantity of coloured water into mixture

$$\frac{4x}{3x + 10}$$

The final ratio is $\frac{4}{5}$

So the equation is:

$$\frac{4x}{3x+10} = \frac{4}{5}$$

Let's cross multiply the equation

$$5(4x) = 4(3x+10)$$

$$20x = 12x + 40$$

$$20x - 12x = 40$$

$$\Rightarrow 8x = 40$$

$$\Rightarrow x = \frac{40}{8} \Rightarrow x = 5$$

Now, we can find by putting the x value in equation:

$$4x \Rightarrow 4 \times 5 = 20 \text{ litres of } S$$

20 litres of sugar solution

$$3x \Rightarrow 3 \times 5 = 15$$

15 litres of coloured water

$$20 + 15 = 35$$

The initial quantity of the mixture is 35 litres

Step 4 (5) :-

Add the difference of 98 to 102
that is 200.

So the final pattern would be

-10, -8, 6, 40, 102, 200

Ans.

Q.No. 8

(A)

Data :-

$$\text{Charge} = \pounds 20 + 4n$$

$$\text{windows} = 7$$

$$\pounds 20 + 4n$$

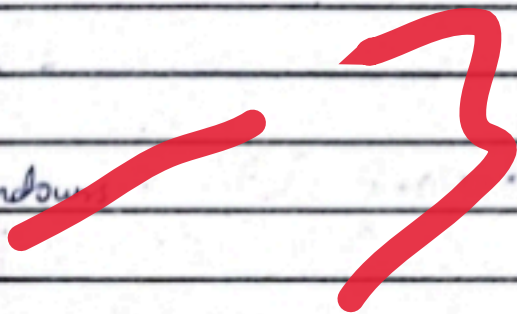
no. number of windows

$$\pounds 20 + 4(7)$$

$$\Rightarrow \pounds 20 + 28$$

$$\Rightarrow 48$$

$$\Rightarrow \text{Brian would charge } \pounds 48$$



Q.No.6.(D)

Given series : $-10, -8, 6, 40, 102, ?$

Step #1

Let's find the difference :

$$102 - 40 = 62$$

$$40 - 6 = 34$$

$$6 - (-8) = 14$$

$$-8 - (-10) = 2$$

The differences for the sequence
Step #2: $2, 14, 34, 62$

The difference from there

$$62 - 34 = 28$$

$$34 - 14 = 20$$

$$14 - 2 = 12$$

Now we have,

Step #3 $12, 20, 28$

These terms increasing by 8.

The next term in step 3 would be

$$28 + 8 = 36$$

Step #4: The next difference after 62 would be: $62 + 36 = \boxed{98}$

Q.NO.6 (c)

Volume of a football with a radius of 12 cm

$$\text{Formula} = \frac{4}{3} \pi r^3$$

$$\Rightarrow \frac{4}{3} \pi (12)^3$$

$$\Rightarrow \frac{4}{3} \pi (12 \times 12 \times 12)$$

$$\Rightarrow \frac{4}{3} \pi \times (1728)$$

$$\text{Volume} = \frac{4 \times 1728}{3} \pi$$

$$\Rightarrow \frac{6912}{3} \pi$$

$$\Rightarrow 2304 \pi$$

$$\Rightarrow \pi = 3.14159$$

$$\Rightarrow 2304 \times 3.14159$$

$$\Rightarrow 7235.31 \text{ cm}^3 \quad \text{or} \quad 2304\pi$$

is the volume of football

Q.No.8 (B)

(i) raliēp

Replica

(ii) tyhniaum

Thyriatum

Thyriatum

(iii) arsehel

Arsehel

(iv) moniteah

Heat moniteah

(v) taeph

(vi)

Haptee

Q.No.8 (C)

$$A = \{10, 11, 12, 13, 15\}$$

$$B = \{10, 12, 14\}$$

$$U = \{10, 11, 12, 13, 14, 15, 16, 18\}$$

Complement of A (A')

$$A' = U - A$$

$$\Rightarrow \{14, 16, 18\}$$

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Complement of $B (B')$

$$B' = U - B$$

$$\Rightarrow \{11, 13, 15, 16, 18\}$$

Intersection $(A \cap B)$

$$\Rightarrow \{16, 18\}$$

Union of A and B

$$A \cup B = \{10, 11, 12, 13, 14, 15\}$$

Complement of $A \cup B$

$$(A \cup B)'$$

$$U - A \cup B$$

$$\Rightarrow \{16, 18\}$$

$$(A \cup B)' = \{16, 18\}$$

$$(A' \cap B') = \{16, 18\}$$

The equation $(A \cup B)' = A' \cap B'$ for

the sets $A = \{10, 11, 12, 13, 15\}$,

$B = \{10, 12, 14\}$, and $U = \{10, 11, 12, 13, 14, 15, 16, 18\}$

Holds true