

Do's and Don'ts for General Science & Ability Paper

Date: 27/10/2024

Day: Tuesday

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.

Double Covalent bond:

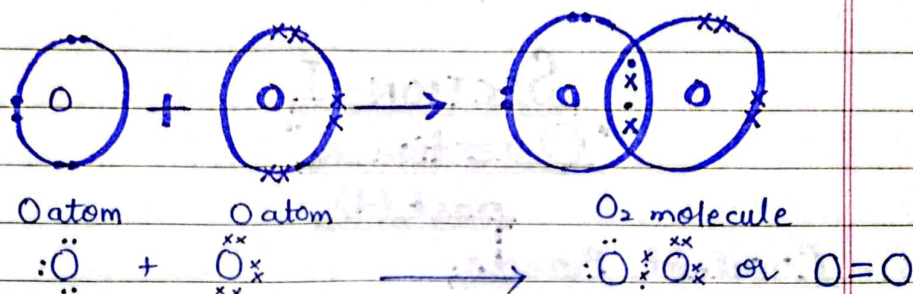
6. In ability portion, give explanation for analytical ability question in words. You need to understand that a 5 mark part requires all steps written and explained.

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

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For example, there exist a double covalent bond in O_2 molecule which is represented as:

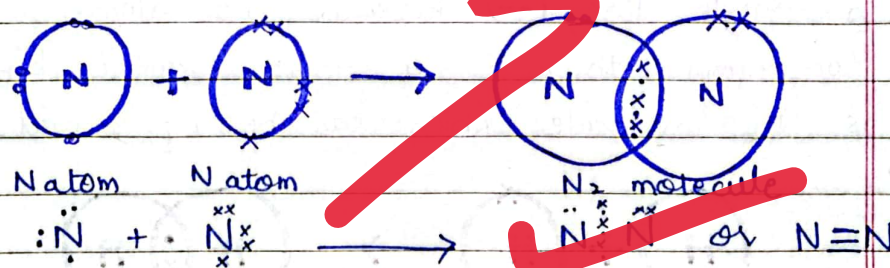


Sigma and

(iii) Triple covalent bond Pi??

The bond that is formed by the mutual sharing of three electron pairs is called triple covalent bond. It is represented by a triple line ($\equiv$) between two atoms.

For example, there exist a triple covalent bond in N_2 molecule which is represented as:



"Question 3"

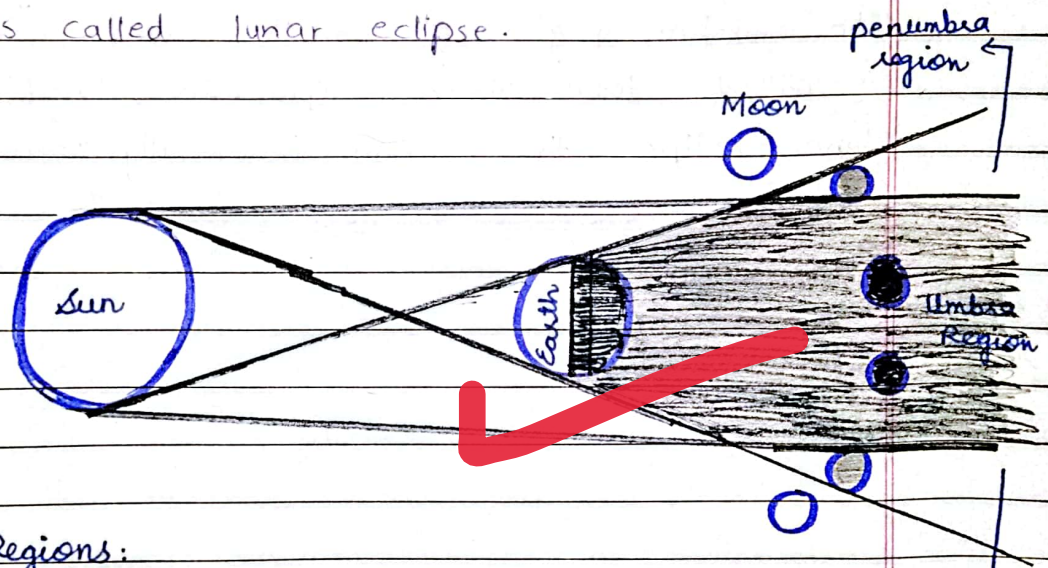
part (a)

Ans: Introduction:

"An eclipse occurs when there is a syzygy (when three or more astronomical bodies come in a straight line configuration)."

Lunar Eclipse:

The moon revolves around earth and at the same time earth orbits the sun. Sometimes the earth comes between the moon and the sun. When this happens, earth blocks the sunlight reaching the moon (the light that causes the moon to shine). So instead of sunlight, the dark shadow of earth falls on the moon. This is called lunar eclipse.



Regions:

The Earth forms a conical shadow in space. At any point within that cone the light is wholly obscured. Surrounding the shadow cone also called umbral region is a region of partial shadow called penumbral region.

Types of eclipse:

- (i) Penumbral lunar eclipse: When the moon only passes through the penumbra of earth shadow, it is called penumbral lunar eclipse. It is rarely visible from earth.

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as there is slight change in colour.

(ii) Partial lunar eclipse:

When only a part of moon passes through the umbra region of earth shadow, it is called partial lunar eclipse. as its whole area is not obscured by the shadow.

(iii) Total lunar eclipse:

When the entire moon passes through the umbra region of earth shadow, it is called total lunar eclipse. In total lunar eclipse the moon is totally obscured.

Add diagrams
separately

SECTION - II
"Question 6"
part (a)

Given Data:

Arithmetic mean = 15

no of values = 5

values = 9, 8, 10, k, 12

To find:

k value = ?

Solution:

$$\text{Arithmetic mean } (\bar{X}) = \frac{\text{Sum of all values } (\sum X)}{\text{number of all values } (n)}$$

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

$$(15) \times 5 = 39 + k$$

$$+ 5 = 39 + k$$

$$75 - 39 =$$

$$\boxed{36 = k}$$

Conclusion:

The value of k is 36.

part (b)Given Data:

Ratio of sugar solution to colored water = 4:3

Amount of colored water added = 10 liters

New / Resultant Ratio = 4:5

To find:

Initial quantity of sugar solution = ?

Solution:

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Initial ratio of sugar solution and colored water is $4x : 3x$ or $4x/3x$

Now 10 liters of colored water is added so:

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

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

$$20x = 12x + 40$$

$$20x - 12x = 40$$

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

$$x = 5$$

As ratio of sugar solution was $4x$ so quantity of sugar solution will be $4 \times 5 = 20$

Conclusion:

Initial quantity of sugar solution is 20.

part (c)

Data:

Radius of football = 12 cm

To find:

Volume of football $V = ?$

Solution:

As football has shape of sphere so formula for volume of sphere will be used. in order to find the volume of football.

$$V = \frac{4}{3} \pi r^3$$

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$$V = \frac{4}{3} \left(\frac{22}{7} \right) (12)^3$$

$$\therefore \pi = \frac{22}{7}$$

$$V = \left(\frac{4}{3} \right) (3.14) (144 \times 12)$$

$$V \approx 3.14$$

$$V = 7107.76 \text{ cm}^3$$

Conclusion:

The volume of football is 7107.76 cm^3 .

part (d)

Given Data:

Series = $-10, -8, 6, 40, 102, ?$

To find:

The missing number = ?

Solution:

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

$\begin{array}{cccccc} \vee & \vee & \vee & \vee & + & \vee \\ 2 & 14 & 34 & 62 & & \boxed{98} \end{array}$

$\begin{array}{cccccc} \vee & \vee & \vee & + & \vee \\ 12 & 20 & 28 & & \boxed{36} \end{array}$

$\begin{array}{ccc} \vee & \vee & + \\ 8 & 8 & 8 \end{array}$

Conclusion:

The missing number in series is 200.

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"Question 7" part (a)

Given Data:

$$20\% \text{ of } x = y$$

To find:

$$y\% \text{ of } 20 \text{ in terms of } x$$

Solution:

$$20\% \cdot x = y$$

$$\frac{20}{100} x = y \quad \text{---(i)}$$

$$y\% \cdot 20 = ? \text{ value ---(ii)}$$

Put value of eq (i) (y) in eq (ii)

$$y\% \cdot 20 = \text{value} \quad \therefore y = \frac{20x}{100}$$

$$\left(\frac{20x}{100} \right) \% \times 20 = \text{value}$$

$$\left(\frac{20x}{100} \right) \frac{1}{100} \times 20 = \text{value}$$

$$\frac{400x}{10000} = \text{value}$$

$$\frac{4x}{100} = \text{value (y)}$$

$$\boxed{0.04x = \text{value (y)}}$$

Conclusion:

So $y\%$ of 20 in terms of x is 0.04.

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part (b)Given Data:

P and Q average salary = Rs 5050

Q and R average salary = Rs 6250

P and R average salary = Rs 5200

To find:

Monthly salary of P = ?

Solution:

$$\rightarrow \frac{P+Q}{2} = 5050$$

$$P+Q = 2(5050)$$

$$\boxed{P+Q = 10100} \quad \text{--- (i)}$$

$$\rightarrow \frac{Q+R}{2} = 6250$$

$$Q+R = 2(6250)$$

$$\boxed{Q+R = 12500} \quad \text{--- (ii)}$$

$$\rightarrow \frac{P+R}{2} = 5200$$

$$P+R = 2(5200)$$

$$\boxed{P+R = 10400} \quad \text{--- (iii)}$$

Now subtracting eq. (i) and (iii)

$$P+Q = 10100$$

$$\pm P \pm R = \pm 10400$$

$$Q-R = -300 \quad \text{--- (iv)}$$

Now adding eq. (ii) and (iv)

$$Q+R = 12500$$

$$Q-R = -300$$

$$2Q = 12200$$

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$$\frac{2Q}{2} = \frac{12,200}{2}$$

$$Q = 6100$$

Put the value of Q in eq. (1)

$$P + Q = 10100$$

$$P + 6100 = 10100$$

$$P = 10100 - 6100$$

$$P = 4000$$

Conclusion:

Monthly salary of P = 4000

part (c)

Given Data:

No of times coins tossed $n = 500$ times.

(i) No of times 2 heads appear $(E) = 105$ times.

(ii) No of times 1 head appear $(E) = 275$ times

(iii) No of times no head appear $(E) = 120$ times

To find:

Probability of each event to occur = ?

Solution:

(i) Probability of 2 heads = No of favorable outcomes of 2 heads (E)

Total no of possible outcome (n)

$$= \frac{105}{500}$$

$$= \frac{21}{100}$$

$$= 0.21$$

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(ii) probability of 1 head = $\frac{\text{no of times 1 head appear (E)}}{\text{Total no of possible outcome (n)}}$

$$= \frac{11}{55}$$

$$= \frac{500-100}{50}$$

$$= \frac{11}{50} \text{ or } 0.55$$

(iii) Probability of no head = $\frac{\text{no of times no head appear (E)}}{\text{Total no of possible outcome (n)}}$

$$= \frac{6}{24}$$

$$= \frac{500-100}{50}$$

$$= \frac{6}{25} \text{ or } 0.24$$

Conclusion:

The probability of all events are 0.21, 0.55 and 0.24 respectively. The sum of all three events probability $0.21 + 0.55 + 0.24$ is equal to 1.

part (d)Given Data:

Jamie's Age = x

Jamie's Dad age = $4x$

After 14 years = Jamie's dad will be

twice the age of Jamie.

To find:

Sum of Jamie's age now and Dad age now?

Solution:

Initially Jamie = Jamie's Dad
 $x = 4x$

After 14 years

$$2(x + 14) = 4x + 14$$

So:

$$2x + 28 = 4x + 14$$

$$2x - 4x = 14 - 28$$

$$-2x = -14$$

$$x = 7$$

So Now

→ Jamie's Age $x = 7$

→ Jamie's Dad Age $4x = 4 \times 7 = 28$

Sum of Jamie's Age Now and Dad Age Now = $7 + 28 = 35$

Conclusion:

Sum of Jamie's age and his dad age now is 35.