Dos and Don'ts for Generaral Science & Ability Paper

Hi there, you've done well. Know that acquiring knowledge is one thing and reproducing it in paper acccording 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. :)

- Respirator Distress
- Severe Bleeding
- Organ impairment.

(iii) Worning Signs:

- Decrease in temperature (below 38°C / 100°F)
- Severe abdominal pain
- Resistant vomiting
- Rapid Breathing
- Bleeding gums.
- Fatigue
- Restlessness
- Blood in vomit.

After the warning symptoms appear in the patient next 24 hours are lethal for him and proper medical attention is required to save his life.

Answer (ii)

Dark Energy:

- In 1929, Edward Hubble determined that the universe is expanding
- Due to the expansion in universe

empty spaces are created. Dark energy is some kind of energy intrinsic to these empty spaces.

Features of Dark Energy:

(i) It makes up approximately 68% of the Universe and appears to be associated with the vacuum in space.

(ii) It is evenly distributed throughout the universe.

(iii) Evenly distribution means that it doesn't have local gravitational effect rather it has a global effect on the universe which leads to repulsive forces which tends to accelerate the expansion.

Ideas to explain Dark Energy:

(i) Empty spaces has its own energy.

(ii) Idea of Einstein in 1917, idea of cosmological constant, a force that counteract force of gravity.

(iii) It is unknown kind of energy fluid or field.

تاریخ: __/__/__

Dark matter:

- Galaxies are rotating with such speed that the gravity generated by this observable matter couldn't possible hold them together; they should have torn themselves long ago. This led scientists to believe that something we can't see at work.
- This lead to thought that there is some extra mass which is providing additional gravity to hold these galaxies. This strange matter is named as Dark matter, yet not visible.

Features of Dark matter:

- Unlike normal matter, it doesn't interact with electromagnetic force.
- It doesn't absorb, emit or reflect sunlight.
- Scientists are able to infer its existance only by gravitational effect.
- Places with concentration of dark matter bend light passing nearby (interact with

gravity).

- It seems to outweight visible matter is roughly 6 to one making up about 27% of the universe

Answer (iii)

Structure of Mitochondria:

- The mitochondria may be vesicle rod or filament shaped.
- Bounded by two membranes.

Outer Membrane
↓
Smooth

Inner membrane
↓
Forms many infoldings called cristae.
↓
The inner structure of cristae contains small knob like structure called F1 particles.
↓
These particles are suspended inside the matrix.

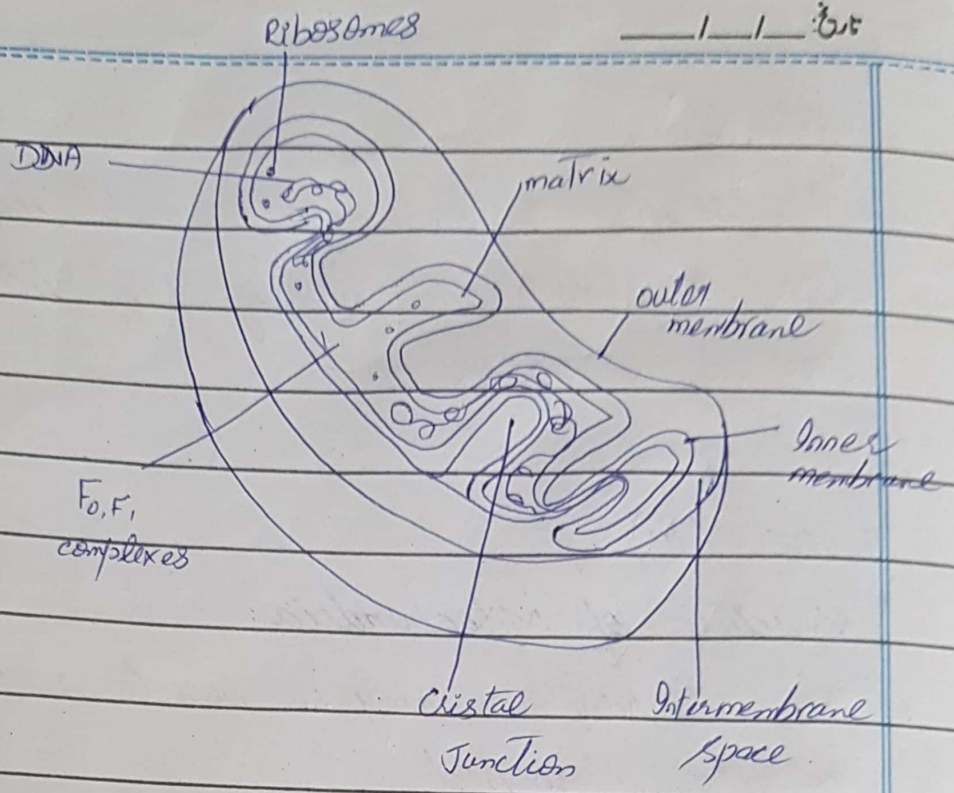


Fig: Structure of mitochondria

Functions of Mitochondria:

1- Krebs cycle
2- Aerobic respiration
3- fatty acid metabolism.

} metabolic Processes

Explain?

Mitochondria → Powerhouse of cell:

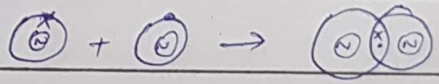
Mitochondria is one of the most important organelle of Eukaryotic cells Energy is released from organic food during the metabolic processes taking place inside mitochondria. This energy is provided to energy rich compound

ATP. ATP provides energy to cell on demands and ATP is broken to ADP. This ADP absorbs energy from mitochondria and again becomes ATP. This is how mitochondria works as the powerhouse of cell.

Answer (d)

Covalent Bonds:

The bonds which are formed through ~~transfer~~ sharing of electrons is known as covalent bond.

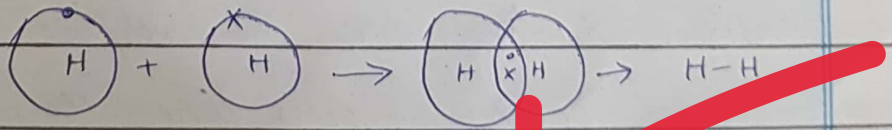
Here 

Types of Covalent Bonds:

① **Single covalent Bond:**

When a covalent bond is formed by the sharing of single pair of electrons

eg $H + H \rightarrow H_2$



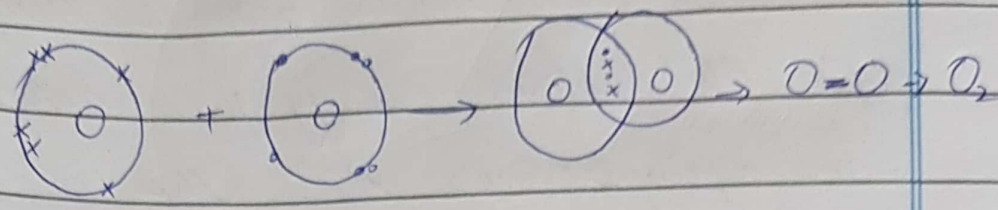
② **Double Covalent Bond:**

When a covalent bond is formed

تاریخ: ___/___/___

by sharing of two pair of electrons

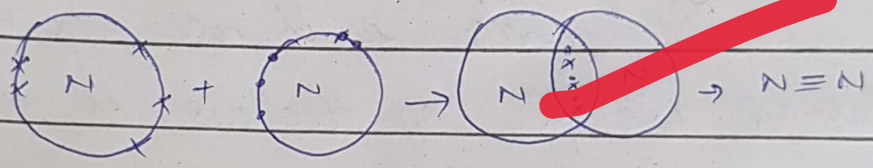
eg



③ Triple covalent Bond (X≡X)

Molecules can be formed by sharing of three pair of electrons.

eg



Question : No. 03

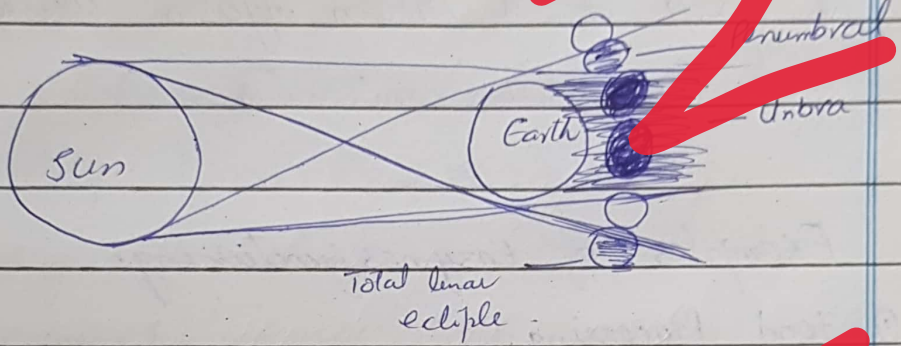
Answer : a

Lunar Eclipse:

Lunar Eclipse takes place when earth comes between moon and sun Earth casts shadow over the surface of moon. Lunar Eclipse occurs when the moon is full.

Types of lunar Eclipse:

1. Total lunar Eclipse
2. Partial lunar Eclipse
3. Penumbral lunar Eclipse



Answer (b)

Function Enzymes:

"Enzyme is specialized organic ~~structure~~ substance, composed of polymers of amino acids that act as catalysts to regulate the speed of the many chemical reactions involved in the metabolism of living organisms".

Functions of Enzymes:

1) Play vital role in signal transduction and cell regulation.
2) Breakdown nutrients into useable molecules.

3) Store and release energy (ATP)
4) Coordinate biological reactions between different systems in an organism.
5) They take part in bodily movement with the help of a protein myosin which aids in muscle contraction.

Examples of Enzymes functioning:

1. Food Processing:

Amylases enzymes are used in production of sugars from starch in making corn syrup. Catalyze Enzyme is used in breakdown of starch into sugar and in baking fermentation process of yeast raises the dough.

Proteases Enzyme: help in manufacturing of biscuits and in lowering the protein level.

Trypsin Enzyme: used in the baby foods used on for pre-digestion of baby foods.

Answer (iii)

Electromagnetic Radiations:

Radiations that has both electric and magnetic fields and travels in waves.

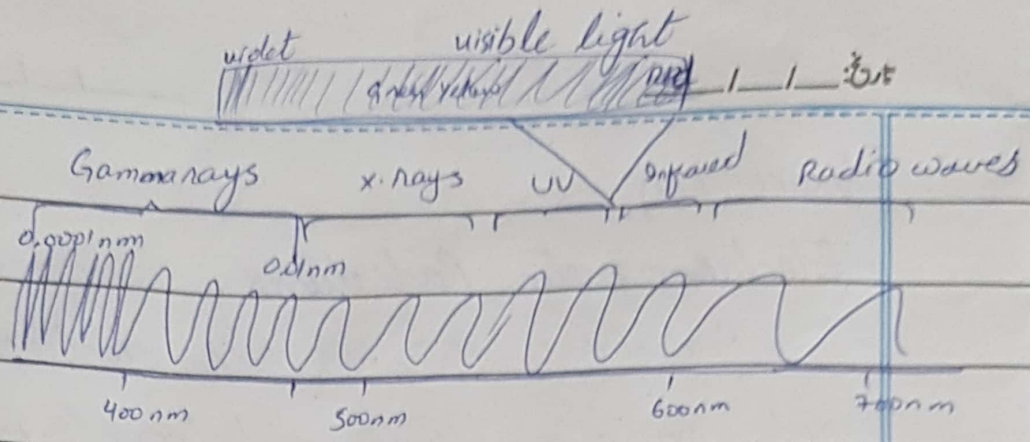
Electromagnetic Radiations can vary in strength from low energy to high energy. It includes radio waves, microwaves, infrared light, visible light, ultraviolet light, x-rays and gamma rays.

EMR Spectrum:

The EMR spectrum is a range of frequencies, wavelengths and photon energies covering frequencies from below 1 hertz to above 10^{25} Hz, corresponding to the wavelengths which are a few kilometer to a fraction of a size of an atomic nucleus in the spectrum of electromagnetic waves.

The electromagnetic spectrum consists of a span of all electromagnetic radiations

Explain properly



Answer (iv)

Earthquakes and volcanic eruptions are interconnected.

Earthquakes occur due to the movement of tectonic plates. It happens when the energy is released in the form of seismic waves that results in vibrations over the surface of earth.

Inside the earth molten rocks are present in the form of lava. large amount of energy is trapped in it. When this energy is released along the fault lines over the earth's surface sometimes lava protrudes out from these fault lines.

Generic
Explain
properly

Ans(c)

Given Two coins are tossed 500 times

Two head = 105 times

One head = 275 times

No head = 120 times

To find:

Probability of each event to occur =>

Soln:

$$Prob(E) = \frac{\text{No of ways of occurance of an Event}}{\text{Total Possible Outcomes}}$$

$$Prob(\text{Two heads}) = \frac{105}{500} = \frac{21}{100}$$

$$Prob(\text{one head}) = \frac{275}{500} = \frac{11}{20}$$

$$Prob(\text{one head}) = \frac{11}{20}$$

$$Prob(\text{NO head}) = \frac{120}{500}$$

$$Prob(\text{NO head}) = \frac{6}{25}$$

Ans (d)

let age of Jamie = x.

" age of Jamie's Dad. = y

After 14 years

Jamie age = $14+x$

Age of Jamie Dad = $2(14+y)$

To find :

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

Soln:

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

$$14+x = 28+2y$$

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

$$-x = 14$$

$$x = -14$$

⇒ According to 1st condition Jamie's Dad is 4 times older than Jamie :

$$4x = y$$

In 14 years time, Jamie's Dad will be twice the age of Jamie.

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

$$x+14 = 2y+28$$

$$x-2y = 28-14$$

$$\boxed{x-2y = 14}$$

Section - II

Q. NO.07

Answer (a)

20% of $x = y$

$\frac{20}{100} x = y$

$\frac{1}{5} x = y$

$x = 5y$

$y\%$ of $20 = x$

As $\frac{y}{100} x = 5y$

$\frac{1}{5}\left(\frac{y}{100} \times 20\right) = x$

$y = x\%$

Answer (b)

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

Monthly salary of P = ?

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

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

$P + Q = 2(5050)$

$= 10100$

$Q + R = 2(6250)$

$= 12500$

$P + R = 2(5200)$

$= 10,400$

Monthly salary of P?

~~$P = 10100 - Q$~~

$P + Q - (Q + R) = 10100 - 12500$

$P + Q - Q - R = 2400$

$\boxed{P - R = 2400}$

$P - R + P + R = 2400 + 10400$

$2P = 12800$

$\boxed{P = 6,400}$

⇒ Monthly salary of P is 6,400

$4x - y = 0 \quad - (i)$

$4(x - 2y = 14)$

$4x - 8y = 56 \quad - (ii)$

subtracting eq (ii) from (i)

$4x - y = 0$

$\pm 4x \mp 8y = 56$

$7y = 56$

$\boxed{y = 8}$

$4x - y = 0$

$4x - 8 = 0$

$4x = 8$

$x = 8/4$

$\boxed{x = 2}$

⇒ Sum of Age of Jamie & his Dad = 8+2

= 10

Question NO: 08

Charge = £ 20 + 4x

n = 7

Charge = £ 20 + 4(7)

= 20 + 28

Charge = 48

⇒ Brian charged £48 from his customer

Ans (c)

L.H.S R.H.S

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

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

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

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

L.H.S

$(A \cup B)'$ =

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

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

$(A \cup B)' = U - (A \cup B)$

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

$= \{16, 18\}$

R.H.S

$A' = U - A$

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

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

$B' = U - B$

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

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

$A' \cap B' = \{14, 16, 18\} \cap \{11, 13, 15, 16, 18\}$

$= \{16, 18\}$.

Hence it is proved that L.H.S = R.H.S

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

Ans: d

No. of Triangles = 20