

Sana Nasim

Batch # 271

QNo-3:

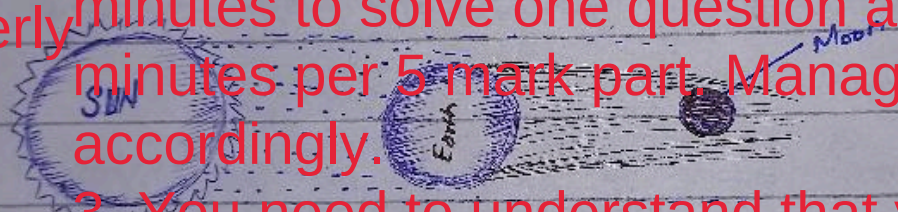
Definition:

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.

Explain properly

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.



Explanation:

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

Add more diagrams

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

b. Functions of Enzymes: Definitions

Enzymes are the biological catalysts which perform following functions:

i. Speed up reaction:

Enzymes speed up the reactions without being consumed in the process. So that they can be used again and again.

ii. Lowering activation energy of reaction:

Enzymes speed up reactions by lowering the activation energy of reactions.

iii. Break down of substrate particles (Digestion):

Enzymes play key role in catalysis, converting substrate molecules in products.

iv. DNA replication and transcription:

Enzymes are the key performers in DNA replication (copying of DNA strand e.g., DNA polymerases, helicases etc., and in transcription (formation of RNA using DNA templates) e.g., RNA polymerase etc.

Highlight important points

v. Regulatory functions:

Enzymes also perform regulatory functions within cells.

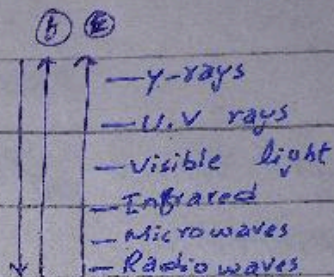
C. Electromagnetic Radiations:

• Defn: Electromagnetic radiations consist of electric and magnetic waves which require no medium for propagation i.e. can propagate through space, and carry momentum and energy.

e.g. Solar energy and light.

• Explanation:

Sun light not only consists of visible light but a variety of radiations.



When we divide these electromagnetic radiations in categories as per their frequency and speed, the series is obtained called EMR Spectrum. This process is done via the specialized instrument called spectrometer which shows bands of radiations with different energies, speeds and frequency. These radiations are:

- i. Gamma rays: Having highest energy and frequency and lowest wave lengths.
- ii. U.V rays
- iii. Visible light
- iv. Infrared light
- v. Microwaves:

vi. Radiowaves: having lowest energy and speed and highest wavelength.

The wavelength, speed and energy of other radiations vary between γ -rays and radiowaves.

d. Interconnection of Earthquakes and Volcanic Eruptions:

Earthquakes can be caused by movement of tectonic plates as well as by volcanic eruptions.

As volcanoes are formed when magma inside earth finds a weak spot in earth-crust and causes eruption of molten lava which solidifies once outside of volcano. The movement of magma, during this process, inside earth along with gases cause movement of surrounding earth crust (the magnitude can vary). So yes volcanic activity and sudden eruption can cause earthquakes as well. When a considerable quantity of lava (which is magma when under earth crust) comes out it will create a vacuum behind it causing movement of surrounding magma to its place and consequently the movement of area above that region.

QNO 6: (a) value of 'k'

Solution:

As we know that; $\text{Mean} = \frac{\text{Sum of no.'s/quantities}}{\text{Total no. of quantities}}$

As:

$$\text{Mean} = 15$$

So putting values in formula:

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

$$\frac{39+K}{5} = 15$$

$$39+K = 15 \times 5$$

$$39+K = 75$$

$$K = 75 - 39$$

$$= 36$$

So value of K is 36.

(c) Volume of football:

As football is a sphere so its volume will be calculated through the formula

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

while

$$r = \text{Radius} = 12\text{cm}$$

Sol:

$$\begin{aligned}V &= \frac{3}{4} \pi r^3 \\&= \frac{3}{4} \pi (12)^3 \\&= \frac{3}{4} (3.14) (12)^3 \\&= (0.75) (3.14) (1728) \\&= 4069 \text{ cm}^3 \\&\text{or} \\&= 0.004069 \text{ m}^3\end{aligned}$$

Q No 4 (a) Noise Pollution:

Unhealthy and undesirable levels of noise in environment are termed as noise pollution.

Harmful effects:

The healthy level of sounds is 45 db and below. Any sound above this level will be considered noise which cast harmful effects on human beings. Following are the effects:

- i. It can cause psychological impacts e.g. disturbance in concentration, headaches etc.
- ii. High levels of noise can cause auditory damages e.g. deafness etc.
- iii. Noise pollution can also impact birds and animals in the surrounding areas.

• Ways to control and manage:

Noise pollution can be controlled and reduced via :

i. Plantation:

Plantation can act as a barrier and can help in reducing noise levels.

ii. Keeping in check horns & loudspeakers:

Unnecessary horns and loudspeakers should be controlled and should be used where needed.

iii. Noise management in heavy machinery and construction sites:

Steps should be taken to reduce noise on construction sites, also machinery parts should be properly functioning and should be designed in way to produce less noise.

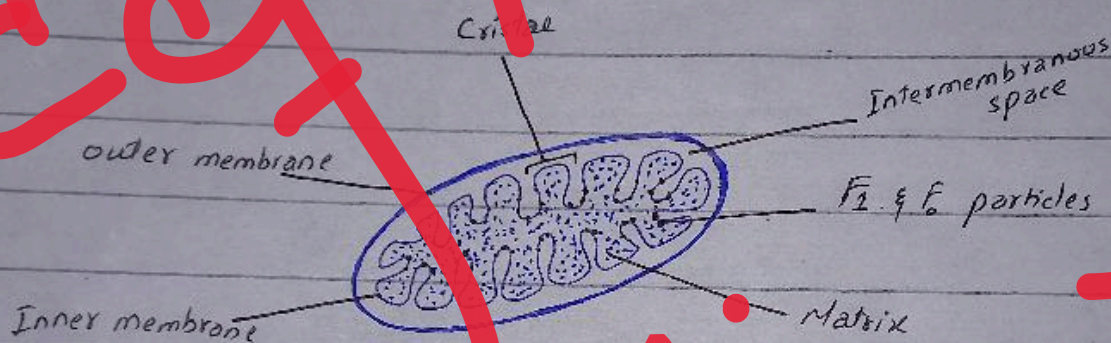
Q No. 2:

(C) Structure & function of mitochondria:

(The Powerhouse)

Mitochondria is called powerhouse of cell because they generate energy in form of ATP molecules for cell. ATP is the energy currency of cell.

Structure



Mitochondria is a double membraned structure. Inner membrane is folded like finger projections called cristae. Cristae contain F_1 and F_0 particles attached on them which are actually ATP synthetase enzymes. Inside of the inner membrane is matrix which contain important nutrients and material including enzymes and a circular DNA. Mitochondria is a self replicating organelle. Most abundantly found in cells which are most active e.g. muscle cells etc. They generate ATP via ETC reactions.

(d) Covalent bonds:

Covalent bond is a type of chemical bond formed by the mutual sharing of electrons between two atoms or more than two atoms.

e.g. H_2O , O_2 etc.

Types of Covalent bonds:

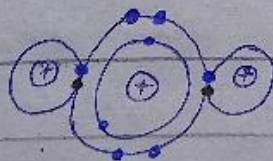
Depending upon the number of electrons shared between two atoms covalent bonds can be divided into

i. Single covalent bond:

When only one electron is shared between two atoms of each type e.g. H_2O



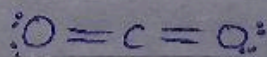
or



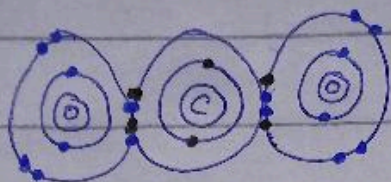
ii. Double Covalent bond:

When two electrons are being shared between atoms of each type.

e.g. CO_2



or



Both atoms share two electrons. 'C' carbon has shared two electrons with one 'O' atom and its two electron with other one.

iii. Tripple covalent bond:

When atoms share three electrons.

e.g. N_2 .