

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. :)

⇒ Dark matter and dark energy:

Dark matter and dark energy are almost related topics pertaining to universe.

Dark matter is the unseen matter that holds immense mass of universe intact. It is almost 27% of universe. This is the same mass that exerts immense force to hold the stars in a universe.

⇒ Dark energy:

Dark energy is opposite to dark mass. It is the energy which causes expansion of universe and mass stars stray from their path.

c) Structure Mitochondria. and function of

1) Outer membrane: Works as a barrier and facilitates transport of substances inside and out.

2) Inner membrane: It is a folded membrane having structures called cristae which increase surface area and house the enzyme necessary for the production of ATP. Folds enable larger area for chemical reactions.

3) Intermembrate space: It is the space between outer and inner membrane containing hydrogen gradient for phosphorylation of ATP.

4) Matrix: The innermost part of mitochondria with ribosomes and DNA embedded. It helps in actual chemical process of energy generation.

- How it is a power house:

It is power house because chemical reaction to breakdown food is started in cell cytoplasm and the product is taken to mitochondria with ATP is formed. Adenosine triphosphate (ATP) is a chemical base which when breaks down supplies energy of function of body.

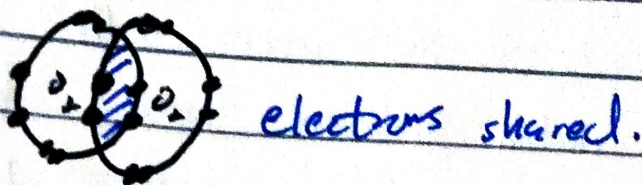
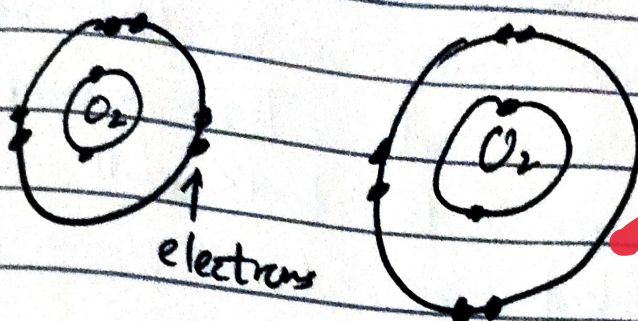
Q) What are covalent bonds

Covalent bonds are bonds made by sharing of electrons. They are weak in nature and easily broken down and mostly formed between non-metals to complete their octet (8) configuration for stability.

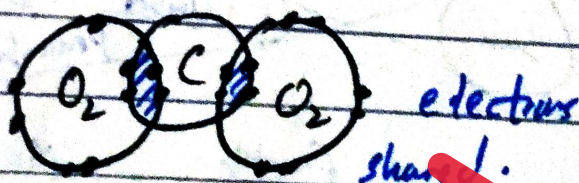
- Types of covalent bonds:

1) Atoms of the same element:

atoms of the same element
such as O_2 . Bonds formed between



2) Atoms of different elements:

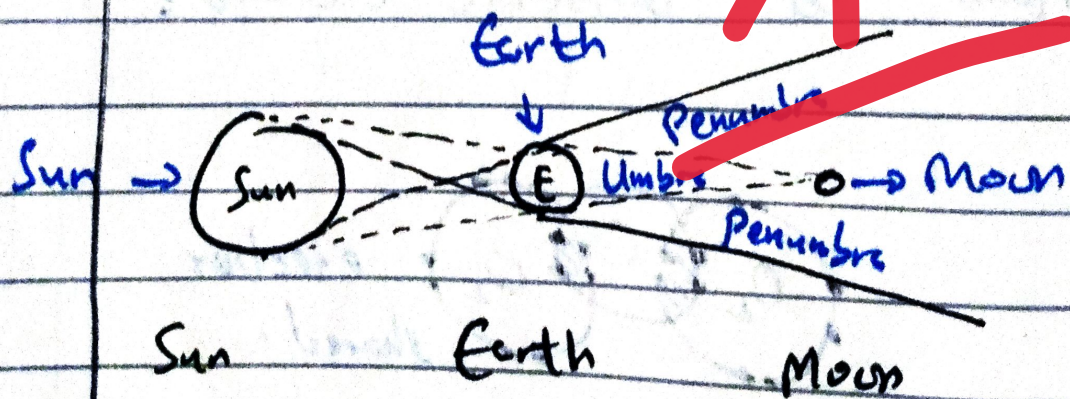


4 valence electrons of carbon
shared by $2 + 2$ valence electrons
of oxygen to complete its octet.
Oxygen also complete its octet by two.

Q No 3 What is lunar eclipse?

Lunar eclipse is a phenomenon when moon reaches at a point when it is not between earth and sun and sun rays are ~~not~~ unobstructed while reaching on earth. This phenomenon turns moon to look dull or reddish in colour.

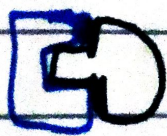
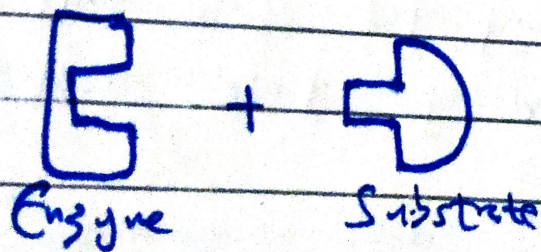
Complete ~~Partial~~ lunar eclipse occurs if the moon falls at umbra whereas moon when falls beside umbra, i.e., in the penumbra region.



b) Enzymes:

Functions of enzymes:

Enzymes are biological catalysts, which help up to speed up the chemical reactions by decreasing the activation energy of reactions. They are proteins in nature and are not consumed in reactions. Enzymes work by 'lock and key' hypothesis when a particular substrate fits with the active site of enzyme and not any other substrate can fix there.



Enzyme + substrate
complex.

Lock and Key hypothesis.

Enzymes function in:

1) Digestion:

- a) Amylase in mouth — digests carbs.
- b) Protease in stomach — digests protein
- c) Lipase in intestines — emulsifies fats

2) Industry:

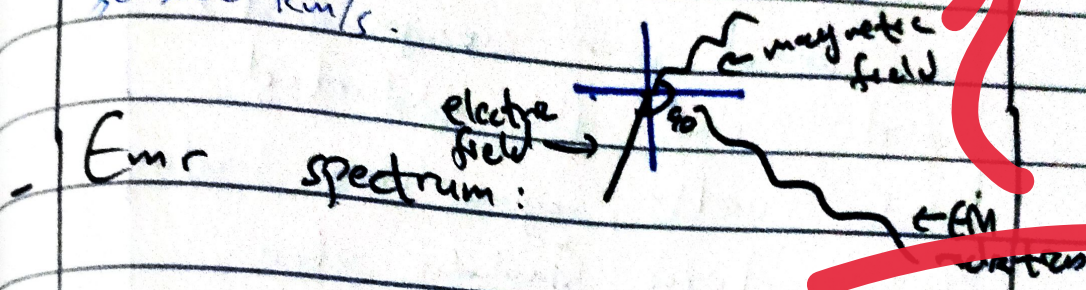
- a) Protease and lipase in detergent industry.
- b) Used in cheese and curd making

3) Medical technology:

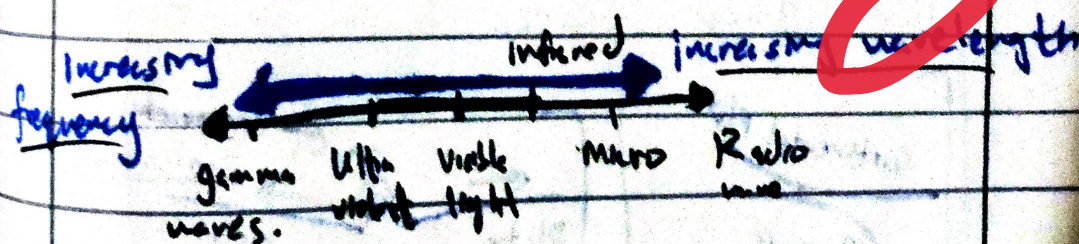
- a) Used in recombinant DNA technique.
- b) Restrictive enzyme used in biotechnology to open bacteriophages and modify their plasmid rings.

1) Electromagnetic Radiations:

These are radiations formed when electric and magnetic field travel perpendicular, i.e., at 90° to each other. These waves are oscillations travelling through space with speed of light which is 300000 km/s .



This is a spectrum of EM waves based on their frequency and wavelength. As frequency is inversely proportional to wavelength, the waves with most frequency have shortest wavelength.



d) Earthquakes and volcano eruptions are inter-connected

Yes, they both are interconnected as both come from same tectonic activity. Earthquakes happen when tectonic plates slide against or away from each other. Similarly, volcanoes are formed when convergent plates collide and the subducted plate melts, magma rises leading to eruptions. Similarly, when divergent plates move apart, magma from the mantle rises up forming eruptions. Therefore, both are interconnected as when there are more volcanoes, there are more changes of earthquakes in those areas.

