

01-12-2025 : 3:05 (1)

Dos and Don'ts for the General Science & Ability Paper

Hi there, you've prepared well! Remember, knowing the content is one thing, but presenting it in the paper exactly as required is another. Here are a few key points to keep in mind:

Star

Planet

1. For a 5-mark part, aim to write at least 2 and at most 3 sides of the answer sheet. Often, a question has two or three parts, and the marks are divided accordingly, so address each part fairly.

2. Manage your time wisely — you have about 35 minutes per full question, which comes down to around 5 minutes for each 5-mark part. Stick to this to avoid rushing later.

Life Cycle of a Star

3. Make your answers look scientific, not just theoretical. Use flowcharts and diagrams wherever they add clarity.
4. Neatness matters — keep your handwriting clean, avoid cutting or overwriting.
5. Mind your spelling and grammar — while USA doesn't deduct marks for these, your expression leaves an impression.
6. In the ability portion, explain analytical ability questions in words. For a 5-mark part, show all steps and provide clear explanations.

• **Nebula:** A cloud of gas and dust where stars are born.

• **Protostar:** Temperature and pressure rise forming a young star.

Good luck for CSS 2026 — you're going to ace it, in sha Allah! ✨

Explain things properly

- **Red Giant:** Star expands as hydrogen depletes
- **Supernova:** Massive stars explode after fuel exhaustion
- **Black hole:** if the remaining core is sufficiently massive, it collapses into a black hole with intense gravity.

(b)

Semiconductors:

Materials whose electrical conductivity lies between conductors and insulators; conductivity increases with temperature.

e.g., Silicon, Germanium

Difference

n-type Semiconductor

p-type

Semiconductor

n-type Semiconductor

- Doped with pentavalent (5-electron) impurities e.g. (phosphorus).

- Extra electrons make electrons the majority carriers

P-type Semiconductor

- Doped with trivalent (3-electron) impurities e.g. (boron).

- Creates "holes", making holes the majority carriers.

Explain

Modern Applications:

1. Diodes and transistors
2. Solar cells and LEDs

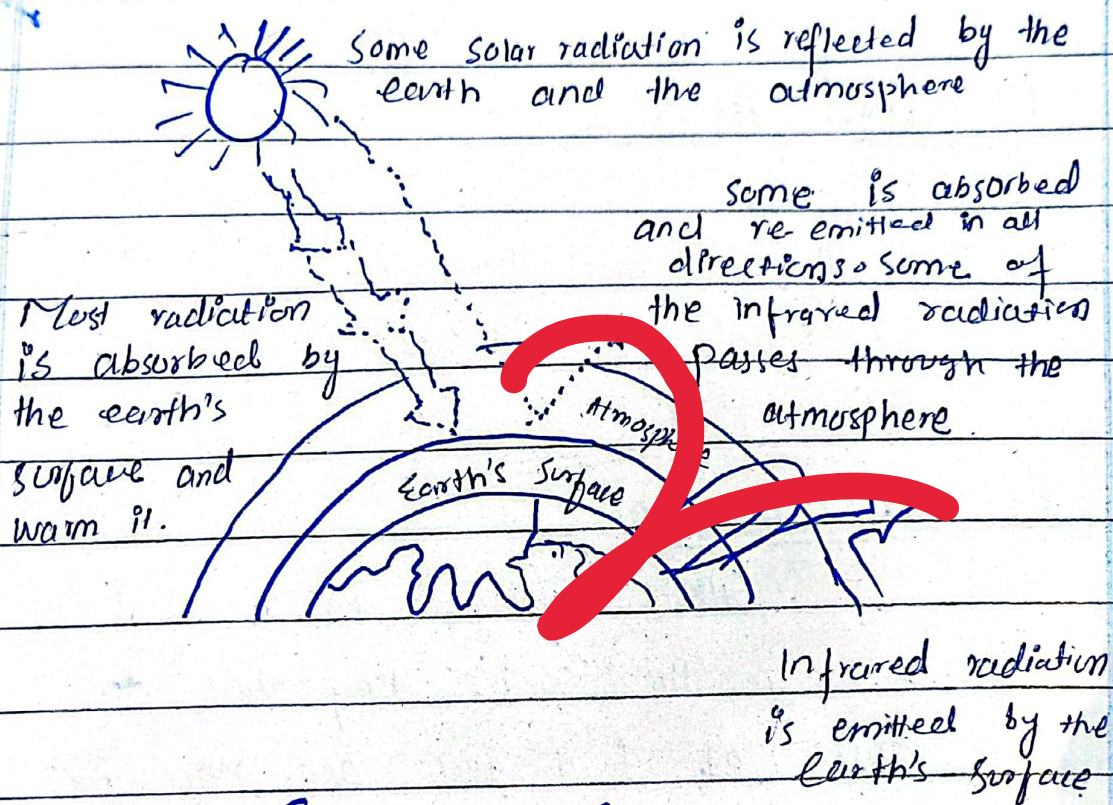
Global Warming:

Global warming is defined as the increases in the earth's temperature due to the use of fossil fuels and other industrial processes leading to a build up of greenhouse gases in the atmosphere.

Green house Gas:

Green house gases (GHGs) are atmospheric gases that trap heat by absorbing infrared radiation emitted from earth's surface, warming the planet through the greenhouse effect.

Greenhouse Effect:



Major Greenhouse Gases:

1. Carbon dioxide (CO_2)
 2. Methane (CH_4)
 3. Nitrous oxide (N_2O)
- A large red checkmark is drawn over the list.

(d)

Tsunami:

Tsunami is a ^{series} ~~set of~~ of massive ocean waves triggered by sudden, large-scale seafloor displacement from earthquakes, landslides.

Natural Processes:

- Earthquakes
- Land Slides
- Volcanic Eruptions
- Meteorite Impacts

• Earthquakes: 80% of tsunamis occur when an undersea earthquake causes vertical movement of the ocean floor.

• Land Slides:

Submarine or coastal landslides displace water rapidly.

• Volcanic Eruptions:

Underwater or coastal volcanic explosions can create massive waves.

Potential impacts

Destruction

Flooding

Erosion

Loss of life

Economic Disruptions

- Destruction powerful waves destroy buildings, infrastructure & settlements.

Flooding:

Water travels far inland, causing widespread flooding.

• Erosion:

Soil erosion and salt contamination of freshwater sources occur.

• Loss of life:

High death tolls due to drowning and debris.

• Economic Disruptions:

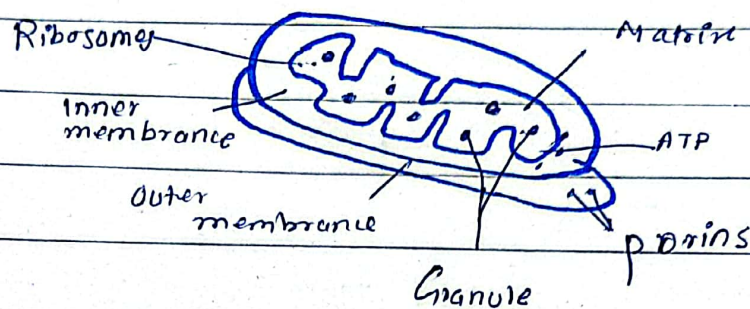
loss of industries, homes, and tourism.

QNO-3:

(9)

Mitochondria:

The mitochondria is the organelle where chemical energy is produced through cellular respiration.



Structure:

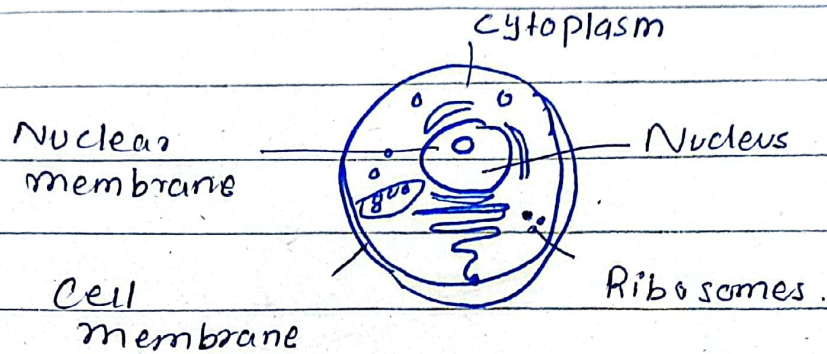
Double-membrane organelle, outer membrane smooth; inner membrane folded into cristae; central matrix. Contains enzymes.

Function:

Performs cellular respiration, breaking down glucose to produce ATP, the energy currency of cell.

Ribosomes:

A ribosome is an intercellular structure made of both RNA and protein, and it is the site of protein synthesis in the cell.



Structure: Small, dense particles made of rRNA + proteins; found free in cytoplasm or attached to rough ER.

Function:

Responsible for protein synthesis by translating mRNA into amino acid chains.

Why mitochondria is called "Power house":

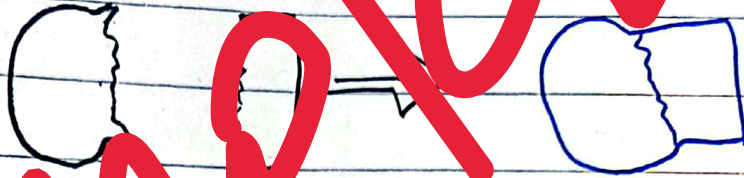
Because it produces most of the cell's ATP during respiration, providing energy for all cellular activities.

(b)

Enzymes:

Biological catalysts made of proteins that speed up chemical reactions without being used up.

Lock and Key model



Enzyme + substrate

Enzyme - Substrate
Complex

- Enzymes has to a specific active site shaped exactly to fit its substrate.
- This process explain enzyme specificity.

Factors Affecting

1. **Temperature:** High temperature denatures enzymes).
2. **pH:** Each enzyme works best at an optimum pH.

Date

(C) Difference between Renewable and non-renewable Resource

Renewable Resources	Non-Renewable Resource.
<u>Depletion</u>	
Renewable resources Cannot be depleted over time	non-renewable resource deplete over time

<u>Sources</u>	
it include sunlight water, wind and also geothermal sources	it includes fossil fuels such as coal and petroleum.

<u>Environmental Impact</u>	
low carbon emissions and low carbon foot print.	has a comparatively high carbon footprint and carbon emissions.

Potential OF wind Energy:

Clean, renewable, and Produces no (pollution)
It can reduce dependence on fossil fuels.
Abundant in many regions and
Cost-effective with modern turbines.

(d)

Dengue Fever:

A viral disease caused by the dengue virus (DENV), affecting blood vessels and platelets.

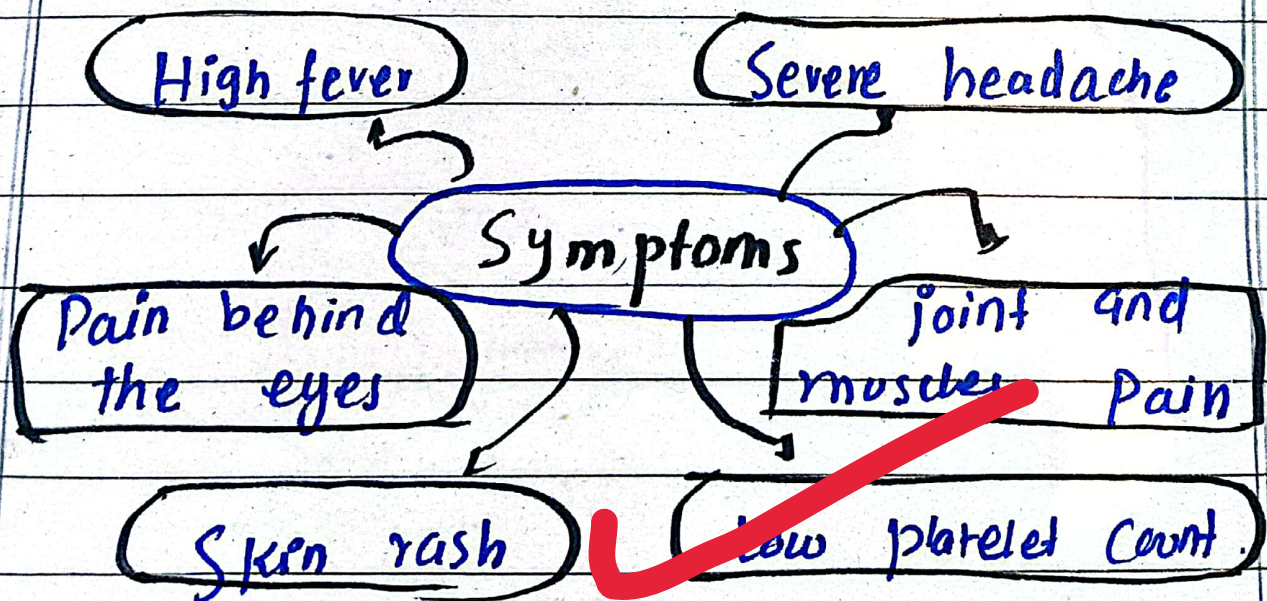
How Dengue is transmitted?

1. Mosquito cycle:

An Aedes mosquito (often Aedes aegypti or Aedes albopictus) bites a person infected with the dengue virus.

2. Human Infection:

The infected mosquito then transmits the virus to another person via bite.



Preventive Measures:

Remove standing water where mosquitoes breed.

- Use mosquito repellents and nets.
- Wear full-sleeve clothing.
- For fumigation and community mosquito control.
- Keep water containers covered.

