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:

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 fully.
2. Manage your time wisely — you have about 35 minutes per full question, which comes down to around 8 minutes for each 5-mark part. Stick to this to avoid rushing later.
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 GSA 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.

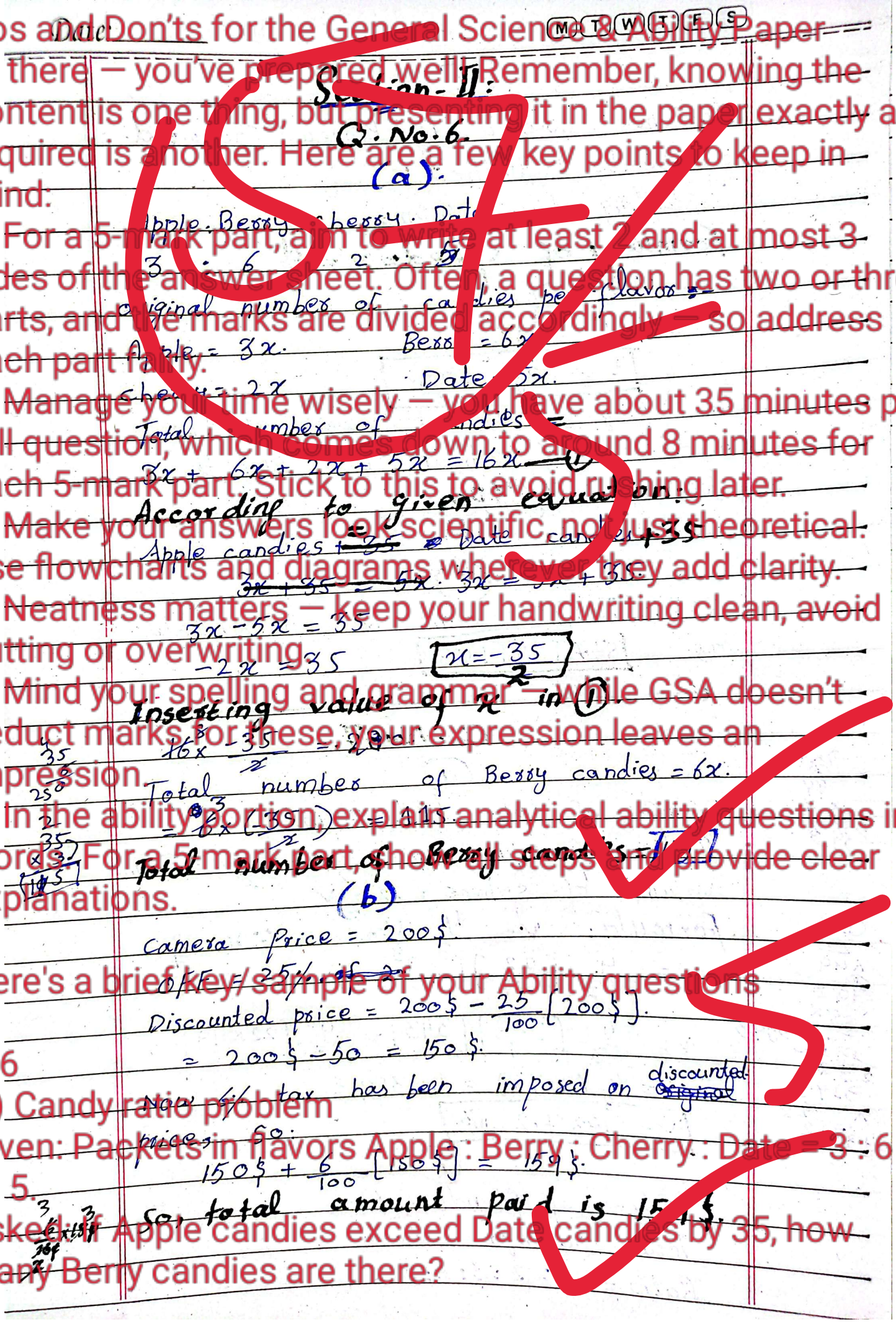
Here's a brief key/sample of your Ability questions

Q.6

a) Candy ratio problem

Given: Packets in flavors Apple : Berry : Cherry : Date = 3 : 6 : 2 : 5.

Asked: If Apple candies exceed Date candies by 35, how many Berry candies are there?



Note (consistency check): The ratio shows Apple = 3 parts,

(c)

Distance covered by Bicycle = 36km = d.

speed = 18 km/hr = v

starting time = 1pm =

Formula of speed = $v = \frac{d}{t}$

so, $18 = \frac{36}{t}$

$18 \times t = 36$

$t = \frac{36}{18} = 2$ hr.

As bicycle started journey at 1pm, addition of 2 hours will end the journey at 3pm.

(d)

(i)

STSTAICIIS can be unscramble as STATISTICS

Q. No. 7.

(a)

Diameter of sphere = d = 14cm.

Radius of sphere = $r = \frac{d}{2} = \frac{14cm}{2} = 7cm$.

volume of sphere = ?? = V

Formula: $V = \frac{4}{3}\pi r^3$ $\because \pi = \frac{22}{7}$.

$V = \frac{4}{3}\left[\frac{22}{7}\right][7^3]$.

$V = \frac{4}{3}\left[\frac{22}{7}\right][343] = \frac{4}{3}[22 \times 49]$.

$V = \frac{4}{3}(1078) = 4 \times 359.3$.

$V = 1437.2\ cm^3$.

(b)

Number of friends = 5.

Total savings = 25000.

Ratio = 1 : 2 : 3 : 4 : 5.

Adding all the ratio:

1+2+3+4+5 = 15.

Share of Friend 1 in total saving:

$\frac{1}{15} \times$ (Total saving) $= \frac{1}{15} \times (25000) = 16666.6$.

Share of friend 2:

$\frac{2}{15} \times [25000] = 3332.2$.

Share of Friend 3:

$\frac{3}{15} \times (25000) = 4998$.

Share of Friend 4:

$\frac{4}{15} \times [25000] = 6554.4$.

Share of Friend 5:

$\frac{5}{15} \times [25000] = 8333.3$.

So, the smallest share is 1666.6.

By (c)

(i)

In this number series, each subsequent number is obtained by multiplying 3 with previous number. 6 is obtained by multiplying 2 with 3. Similarly, 18 is obtained by multiplying 3 with 6. Furthermore, 54 is obtained by multiplying 18 with 3. 162 is obtained by multiplying 3 with 54. Lastly, 486 is obtained by multiplying with 162. So, all numbers are in correct order.

(ii)

~~In the series, difference between 3 and 5 is of 2. 7 is obtained by multipl~~

It is a prime number series.

which are divisible by 1 and only themselves. So, prime numbers are 3, 5, 7, 11, 13, 17, ... So, the next number in series will be 17.

Section I :-

Q.3.

(a)

Organalles:

These are sub-cellular structures which are assigned different functions to coordinate the activities of cells.

Reasons of forming organalles:

(i) **Division of labour inside cell:** cell cannot perform all functions simultaneously. Therefore, it divides function between different organalles for effective activities. **For example:**

Nucleus: It is indolved in replication of cells.

Mitochondria: It generates energy in form of ATP for cell.

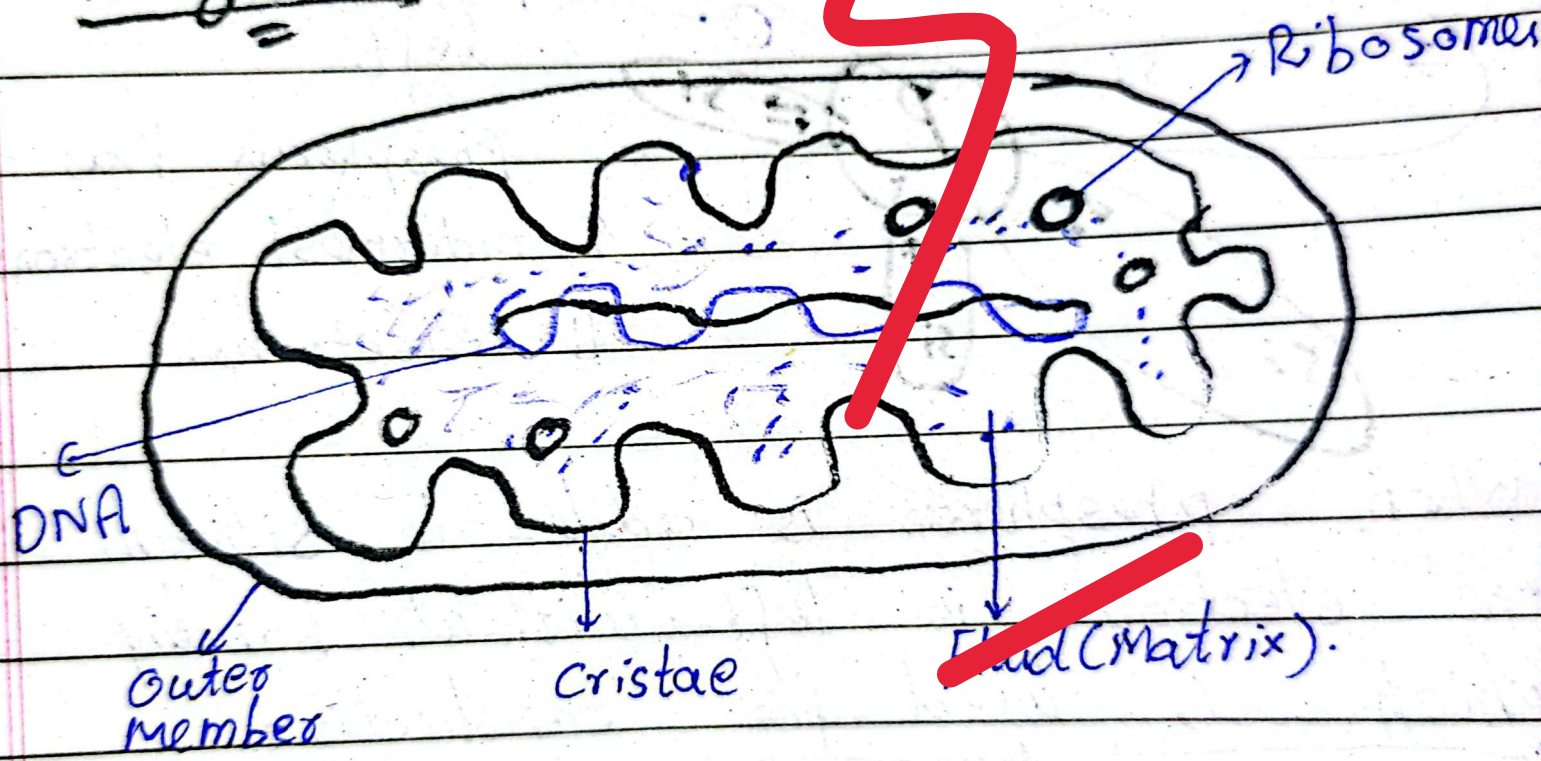
(ii) **Necessary for organization of life:**

In process of evolution, molecules combine to form organalles. Organalles coordinate to form unit of life called cell. Therefore, organizational structure demands existence of organalles.

Mitochondrion:

It is a double membrane bounded organalle in human cell involved in cellular respiration.

Diagram:-



Structure:

- It consists of outer membrane.
- Inside membrane is folded, which is called cristae.

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• It consists of its own ribosome and nucleus.

Functions

• It is involved in cellular respiration i.e. Kreb's cycle and electron chain is present here.
• It produces energy for the cell in the form of ATP.

(b) :-

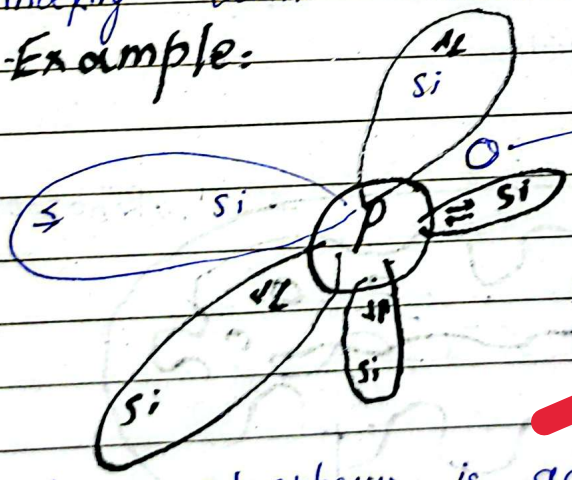
Doping:-

It is a process of adding impurities to intrinsic semi-conductors.

Process:

In this process, elements of group-III or group-V of periodic table is added to silicon or Germanium for making them conductors.

Example:



When phesphorus is added to silicon, one electron is left without bonding. which is used for conduction.

Semi-conductors

These are the materials which have electrical conduction in between conductors and insulators.

Types of semi-conductors:-

i) ~~P-type~~ Intrinsic semi-conductors:

These are the pure form of semi-conductors.

Example: silicon and germanium.

ii) Extrinsic semi-conductors:

These are semi-conductors which which have added impurities in them. They are further catogerized into **P and N type semi-conductors.**

iii) P-type semi-conductors:

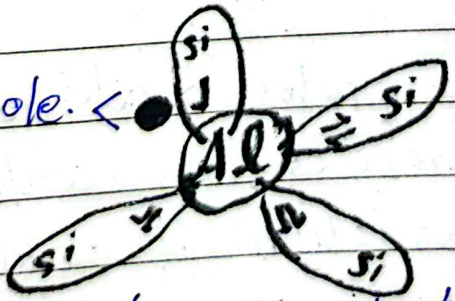
These extrinsic semi-conductors have impurities from Group-V of periodic table.

Example: Phosphorus dopped semi conductor.

iv) N-type semi conductors:

These extrinsic semi conductors have impurity from Group-IV of periodic table, possessing a hole.

Example:



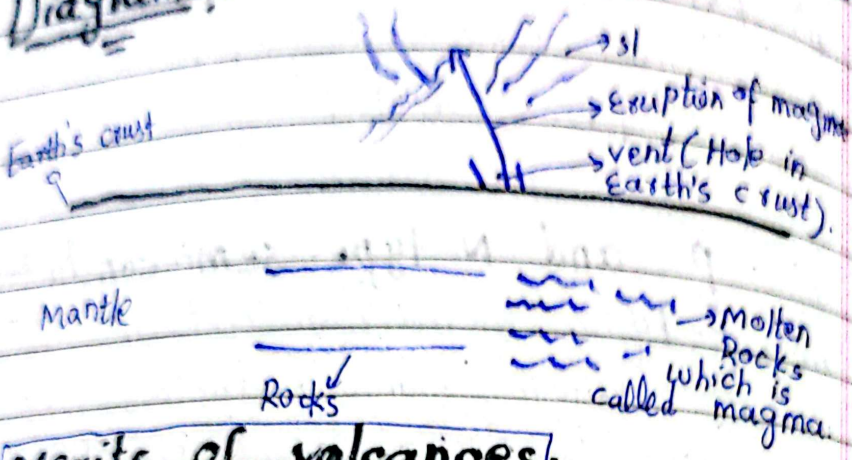
Aluminium has 3 electrons in valence shall, so it forms three bonds with silicon and one-silicon un-paired resulting in positive charged hole.

(c)

volcanic eruption:

It is the eruption of magma through vent on the surface of the earth due to high temperature and pressure.

Diagram:-



Merits of volcanoes:

i) Formation of metamorphic rocks:
When lawa (magma on earth) flows on surface of earth, it cools down slowly. It results in formation of new rocks called metamorphic rocks.

ii) formation of continental plates:
When oceanic plates undergo subduction, it results in earthquake and volcanic eruption. It results in formation of new rocks, which emerges out of the ocean to form new continental plates.

Demerits of volcanic eruption

There are following demerits of volcanic eruption.

1) Enormous production of carbon

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dioxide (CO_2):
volcanic eruption is contamitant with eruption of different gases. The major chunk of these gases is CO_2, which forms 67% of volcanic eruption. It can lead to enhanced greenhouse effect.

ii) Cause infrastructure damage:
most of the volcanic eruption is caused by subduction of tectonic plates. It results in earthquake waves, which damages buildings and roads.

(d)

Dengue:
It is a severe fever, which is caused by a virus transmitted through mosquitoes. These mosquitoes include species of **Aedes Egypti.**

Causative agent:
It is caused due to positive sense RNA containing virus, which has five serotypes.

Transmission:
- This virus is transmitted through Aedes egypti.
- This mosquito replicates in standing water, mostly during monsoon rains.

Symptoms:
There are following symptoms of

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dengue fever:

(i) High fever after 4-6 days of replication. (100°c).
(ii) Pain behind the eyes.
(iii) Pain in the joints due to inflammation.
(iv) Severe headache after 6-7 days
(v) Edema due to fluid leakage during infection.

Remedies:

- Use of acetaminophen and aspirin to control fever and pain.
- Intravenous fluids (IV) in the patients alongwith multivitamins to boost immune system.
- Drinking fruit juice.
- Anti-mosquito sprays during moonsoon.
- Use of mosquito-nets and mosquito repellents.

Q. No. 4.

(a)

Chlorophyll:

It is a double-membrane bounded organalle present in plant cells. It is involved in photosynthesis.

Structure of chlorophyll:

- It consists of double membrane.
- Inner membrane consists of fluid-filled part called stroma.

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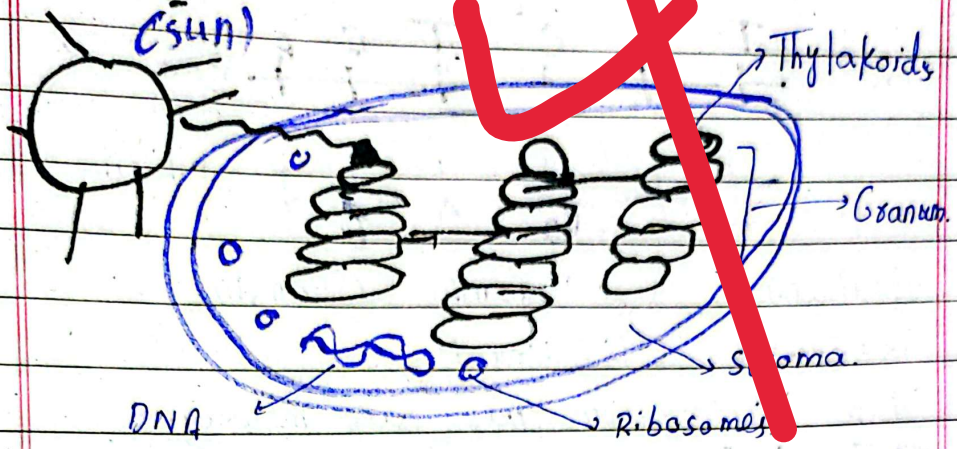
① It consists of stack of sacs called ~~thylakoids~~ granum.
② one sac is called thylakoid.

Diagram.



Function:

① Thylakoids capture the sunlight.
② water and carbon dioxide are absorbed from stroma.
③ In the prescence of sunlight, chloroplast converts carbon dioxide and water to glucose, which is called photosynthesis.

$$CO_2 + H_2O \xrightarrow{\text{sunlight}} \text{Glucose}$$

(b)

Ribosomes:

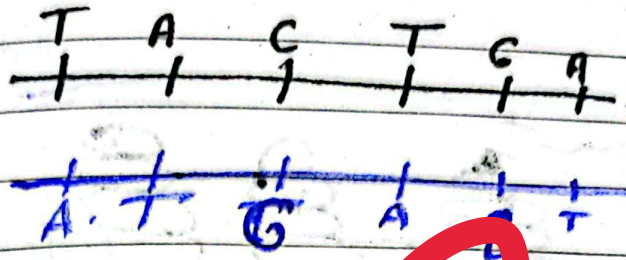
These are organalles present in endoplasmic reticulum and freely in the cytoplasm to form protein for the cell.

Synthesis of proteins by Ribosomes:

Synthesis of proteins can be divided into Transcription and translation.

Transcription:

In this process, codons of genes from are copied onto mRNA inside nucleus.

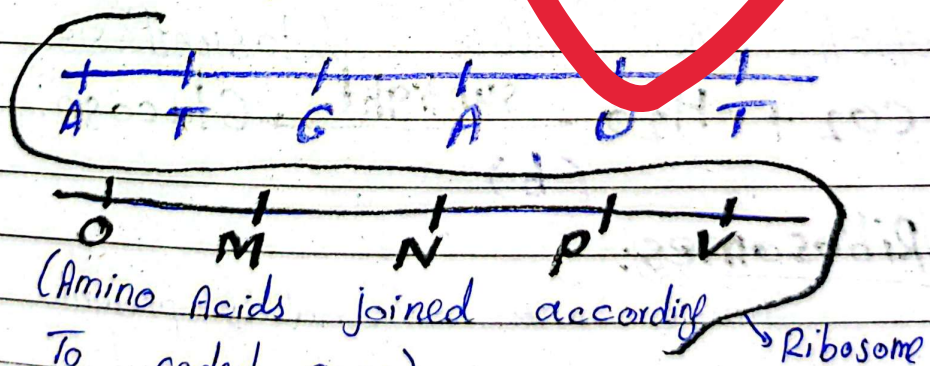


A = Adenine T = Thyamine C = cystine
G = Guanine U = Uracil.

These nitrogenous bases ar[illegible]essages

Translation:-

Copied mRNA is trans[illegible]rted to ribosomes. Ribosomes use tRNA and rRNA to join amino acids according to coded form. These amino acids are joined to synthesize protein, which is called translation.



(Amino Acids joined according To coded gene).

(c)

(i) Solid waste Management:

It is the organized and supervised method of collection, accumulation and disposal of solid waste for sustainable

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urbanization.

Different Methods of Solid Waste Management.

i) Recycling:

It is the process in which certain waste is recycled by industries for further use.

Example:

Plastic is often recycled due to its non-degradable nature.

ii) open deposition:

It is the process in which material is openly disposed at specific places. **United Nations Development recommends that** it should be done away from residential areas, water bodies and critical infrastructure.

iii) composting:

It is the process in which large particles are decomposed into small particles.

Example:

Use of Earth worms (vermi composting) to degrade animal dung.

iv) Incineration:

In this method, material is in closed environments such as incinerators at 1100°c to convert it into small ~~non~~ insignificant particles.

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v) Land filling:
In this method, small sized particles are buried in the landfills in the roads or streets.

(d)

i) Biofuel:
Alternative fuel to non-renewable energy sources produced from plant and animal waste.

ii) Adulteration:
Intentional addition of impure substances to food ingredients for economic gain.

iii) Hydrosphere:
The part of ecosystem which consists of water including moisture and water bodies is called hydrosphere.

iv) Troposphere:
The lowest layer of atmosphere which extends to 31 miles above earth's equator is called troposphere.

v) Isotopes:
These are the atoms which have same atomic number but different atomic masses are called isotopes.