

Subjective Part

Hi there — you've prepared well! Remember, knowing the content is one thing, but presenting it in the paper exactly as required is another.

Q. No. 3

Here are a few key points to keep in mind:

(a): Organelles

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 8 minutes for each 5-mark part.

Why cells form organelles?

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.

2- Protection:

These organelles provide protection to other organelles to harmful reactions

e.g. in lysosomes there is digestive

Here's a brief key sample of your Ability

Date: ___/___/20___

MON TUE WED THS FRI SAT
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enzyme. It is kept away from other cellular components.

3. Specification of Work:

Each organelle performs its own function. These functions run a whole cell of body. e.g. Mitochondria generates ATP and is powerhouse of cell. Nucleus stores genetic information, Ribosomes generate proteins, chloroplasts perform photosynthesis etc.

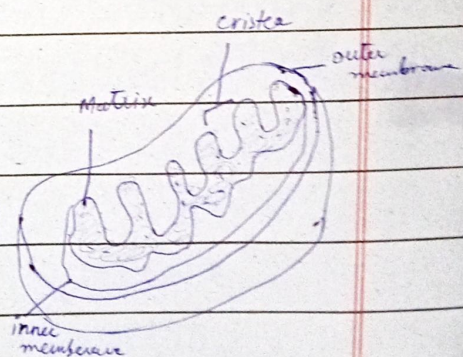
4. Organization:

These organelles help to coordinate complex processes like energy production and transport of protein carried out by Endoplasmic reticulum.

Mitochondria:

It is a membrane bounded cell organelle.

This organelle is termed as "Powerhouse of the cell".



• Structure:

Mitochondria consists of two walls one is outer membrane which is prone

to other chemicals. Other one is inner membrane. It provides storage of protein which is used in power synthesis. There are foldings inside inner membrane called cristae where chemical reaction takes place.

o Function of Mitochondria.

- 1- Most important function of mitochondria is production of energy. Mitochondria produce energy from food inside the matrix called Adenosin Triphosphate through a Process called Krebs cycle.
- 2- Cell Death, is an important phenomenon in cell and mitochondria helps to decide which cell should be dead.
- 3- Storage of Calcium is another important function of mitochondria. This organelle helps in absorbing calcium ions and hold them until they get used.

b:

Doping:

It can be defined as

"The intentional addition of impurity into pure semi-conductor to change its electrical property and to increase its conductivity is called doping."

The main purpose of doping is to increase free charge carriers

Types of Semi-conductors.

Following

are the types of semi-conductors

1- Intrinsic Semi-conductors.

They are the ones who do not have any impurity e.g. Silicon in pure form and Germanium

They are conductors at room temperature and increase conductivity with increase in temperature

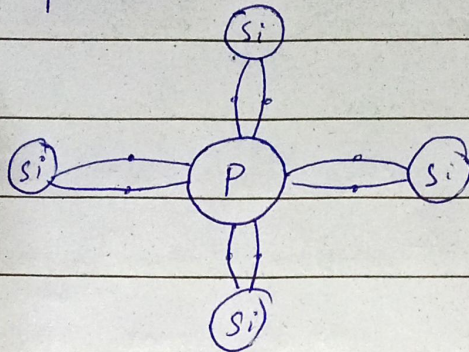
2. Extrinsic Semi-Conductors.

These semi-conductors are doped with impurity for conductivity improvement

It has further two types

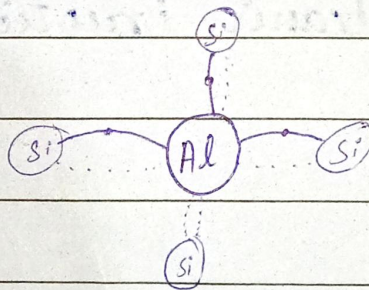
a) N-Type

It is doped with elements having more valence electrons i.e. Penta-valent impurities
e.g. Phosphorous



b) P-Type:

It is doped with elements having fewer valence electrons i.e. Aluminium Al^{3+}



3) Compound Semi-conductors:

They consist of both pure and impure metals. e.g. Gallium Arsenide.

C:

Volcanic Eruption:

Volcanic eruption can be defined as "the sudden release of magma (molten rocks), gases and ashes from Earth's crust on the surface".

When rocks inside the earth melt after the high temperature and pressure of years the rock forms a pathway called volcano and releases the magma out of it.

Merits of Volcanic Eruption:

1. Geothermal Energy:

The eruption occurs and releases a huge amount of heat which can be used to produce energy.

2. Minerals:

Magma brings various earth metals out with it. It cools down and the minerals are used like gold, silver & copper.

3. Fertile soil:

Mineral rich ashes make soil fertile. Although the area remains unused

Date: ___/___/20___

but after the lava cools down the surface of earth becomes fertile due to minerals.

4- Tourist Attraction:

This volcanic eruption is a rare happening and it attracts various tourists and helps in researches around the globe.

Demerits:

Following are the demerits of volcanic eruption.

1- Loss of Life and Property

Sometimes people living in remote areas with less knowledge of these occurrences lose their lives and property as the sudden eruption of volcano occurs. This is the most dangerous aspect of this happening.

2- Air Pollution:

The heat and gas release with sudden burst of volcano. This increases the pollution in atmosphere.

3. Climate change:

Release of gases and heat impacts the climate. Temperature rises and effects weather balances in the whole area.

4. Loss of crops:

Crops and agricultural land around the volcano gets damaged and it causes economic loss for the whole area.

5. Migration of People,

People have to move out of the place to save their lives and this causes a chaos in the other area as well.

d)

Dengue:

Dengue is an infectious virus caused by or transmitted to humans through the bite of *Aedes aegypti* mosquitoes.

Symptoms:

The main symptoms of Dengue virus is high fever, severe headache, backache, joint and muscle pain, rest and nausea. It leads to hemorrhagic fever which is life threatening.

Causative Agents:

This virus is caused by female *Aedes* mosquito. This mosquito lives in clean water and reproduce there. When *Aedes* mosquito bites it releases the infection into human body and mild symptoms start to ~~appear~~ after 2-3 days.

Remedies:

There are few remedies suggested by doctors and specialists.

- 1- As we know this mosquito lives and reproduce in clean water, there must not be any source to provide it habitat.
 - 2- In case of infection, and symptoms, the person must intake liquid juices and fruits to avoid worse conditions.
 3. Use of mosquito repellent can help the bite of mosquito.
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Q. No. 4

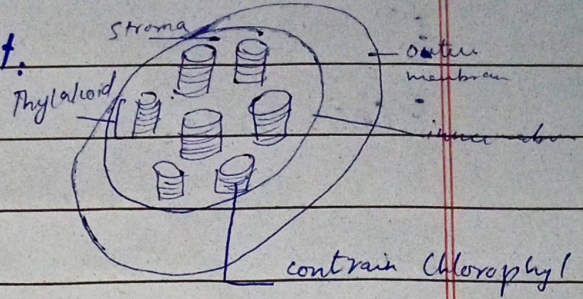
a) Chlorophyll:

It can be defined as 'a green pigment, present in all green plants, responsible for absorption of light and to provide energy for photosynthesis.'

It is located in chloroplast and helps to absorb blue and red light, reflecting green colour.

Structure of Chloroplast.

Chlorophyll is found in chloroplasts. It lies along the walls of mesophyll which helps to receive optimum light. Chlorophyll is enclosed in thylakoid of chloroplast.



Function in Plants

1- Photosynthesis.

Chlorophyll absorbs light energy from sun and provides energy to convert CO_2 into water and carbohydrates.

2- Absorption of energy.

It helps to absorb sunlight which is used to make food for plants.

3- Green colour.

It provides green colour to plants which is signature for health of plants as they perform photosynthesis.

Date: ___/___/20___

b). Ribosomes.

Ribosomes are organelles which help in synthesis of protein by translating mRNA in chain of Amino acids.

How it Works?

1- Read mRNA.

Ribosomes are bind to mRNA which contain genetic instructions for protein.

2. Function with tRNA.

Ribosomes select specific transfer RNA to read genetic instruction of specific protein.

3. Assemble amino acids.

Ribosomes speed up the formation of chains of amino acid linking them together.

4. Moves and Repeat The process.

When chain formation is done, ribosome moves to next protein's mRNA and repeats the process.

ii. Termination,

Ribosomes also stops the mRNA when it reaches the codon. At the formation of protein, ribosomes disemble into parts.

c)

Solid Waste Management:

It is defined as "supervised handling of waste from its generative points through recovery process to the disposal".

The process involves collection recovery and dumping of waste.

Methods of Solid Waste Management,

In the last step of solid waste management, there are different methods to dispose waste.

1. Open Dumping:

It involves the dumping of waste in the outskirts of city. It is quite 'unhealthy method' and

Date: ___/___/20___

creates hygien issues like skin diseases and influenza.

2. Composting,

In this method there is "controlled biological decomposition of organic waste".

In this method organic waste is separated from other plastics or polythene and then converted into a thing called 'composit' which is used as fertilizer.

3. Incineration,

In this process the waste is incinerated at high temperature. It is usually used for hospital waste like syringes, waste organs etc. This method requires various specificities like incinerator, high temperature and dumping site for dangerous gases.

4- Land - fill:

In this method, waste is filled in land and it is covered with soil.

It naturally breaks down the waste and transform it into natural minerals.

This is not suitable for plastics and polythene because plastic takes a huge time for burning.

s- Recycling

In this method, waste like plastics are separated from organic waste and is remoulded into various forms to be reused.

(d)

i. Biofuel:

It can be defined as

"The fuels produced from living organisms and organic matter."

These fuels use plants and animal waste e.g. Ethanol, biodiesel, etc.

ii) Adulteration:

It is defined as

"The addition of harmful or inferior substances in products to increase quantity or cost."

Date: ___/___/20___

It leads to low quality food with the risk of safety of product
 e.g. Addition of brick powder to red chill powder to increase quantity.

iii. Hydrosphere:

The surface of earth which contains water bodies i.e. sea, rivers, canals, spring etc. is called hydrosphere.

Earth is almost 70% water.

iv. Troposphere:

The innermost layer of atmosphere is called troposphere. It ranges from 8-15 km from surface of earth.

v. Isotopes:

The atoms of same element which have same number of protons but different number of neutrons are called isotopes.

e.g. Hydrogen has 3 isotopes. 1

Q. No. 6**a):**

Apple, Berry, Cherry, Date can be denoted as A, B, C, D

According to Condition given and putting same exponent.

$$A : B : C : D = 3x : 6x : 2x : 5x$$

Condition I: Apple exceeds Date by 35

$$D - A = 35$$

$$5x - 3x = 35$$

$$2x = 35$$

$$x = 17.5$$

Condition II: Berry candies - ?

$$B = 6x$$

$$B = 6(17.5)$$

$$B = 105$$

105 berry candies are there.

b):

Price of Camera = 250 \$

Discount = 25%

Tax = 6%

Discount in Dollars = 25% of 250
= 50 \$

$$\text{Discounted Price} = 200 - 50$$

$$= 150 \$$$

$$\text{Tax} = 6\% \text{ of } 150$$

$$= \frac{6}{100} \times 150$$

$$= 9 \$$$

$$\text{Taxed Price} = 150 + 9 = 159$$

$\text{Total Price} = 159 \$$ Paid

c)

$$\text{Distance} = 36 \text{ km}$$

$$\text{Speed} = 18 \text{ km/h}$$

$$\text{Time started at} = 1:00 \text{ pm}$$

$$\text{Time reached} = ?$$

$$\text{Since } S = vt$$

To measure time

$$t = \frac{S}{v}$$

$$= \frac{36}{18}$$

$$= 2 \text{ hour}$$

$$\text{Starting time } 1:00 \text{ pm}$$

$$\text{Reaching time} = 1 + 2 = 3$$

$3:00 \text{ pm}$

d.

i) STATISTICS

ii) ALGEBRA

Q. No. 7

a)

Diameter = 14 cm

Volume = ?

$$\pi = \frac{22}{7}$$

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

$$r = \frac{D}{2} = 7 \text{ cm}$$

$$V = \frac{4}{3} \left(\frac{22}{7} \right) (7)^3$$

$$= \frac{88}{21} \times 343$$

$$= \frac{4312}{3}$$

$$V = 1437.33 \text{ cm}^3$$

Date: ___/___/20___

MON TUE WED THS FRI SAT
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b)

5 Friends total Saving = 25000 Rs

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

Smallest share = ?

For ~~any~~ one part = $\frac{25000}{15}$

= 1666.66

Smallest share = 1×1666.66

= 1666.66 Rs

c)

i-

2, 6, 18, 54, 162, 486

All numbers in above sequence with
the multiplier of numbers is 3.

ii)

3, 5, 7, 11, 13, 17