

Do's 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 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. 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 section, 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) Why cells form organelles? Discuss mitochondria in a human cell.  
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 and Date = 5 parts, so Date is larger than Apple in the ratio. The statement "Apple candies exceed Date candies by 35" contradicts the ratio (Apple cannot exceed Date if ratio is 3:5). Two ways to handle this:

1. If the problem truly intends Apple - Date = 35, that's impossible for the given ratio (would require negative common factor).  
2. Most likely the intended meaning is Date exceeds Apple by 35 (i.e. Date - Apple = 35). I will solve that reasonable interpretation.  
Formula: Let common factor = k. Apple = 3k, Date = 5k.  
So  $5k - 3k = 35 \rightarrow 2k = 35 \rightarrow k = 17.5$ .  
Solution:  $2k = 35 \rightarrow k = 35 \div 2 = 17.5$ .  
Berry =  $6k = 6 \times 17.5 = 105$ .  
Answer: 105 Berry candies.  
(If you intended the other wording exactly as written, note that it is inconsistent with the ratio.)

b) Camera discount + tax  
Given: Original price = \$200. Discount = 25% off. After discount, 6% tax applied.  
Asked: Total amount paid.

Formula / Steps:  
Discount amount = 25% of 200 = 50.  
Sale price = 200 - discount.  
Tax = 6% of sale price.  
Total = sale price + tax.  
Solution (digit by digit):  
Discount =  $200 \times 0.25 = 50$ .  
Sale price =  $200 - 50 = 150$ .  
Tax =  $150 \times 0.06 = 9$ .  
Total paid =  $150 + 9 = 159$ .  
Answer: \$159.00

c) Bicycle travel time  
Given: Distance = 36 km, speed = 18 km/hr, start time = 1:00 PM.  
Asked: Arrival time.

Formula: Time = Distance ÷ Speed.  
Solution: Time =  $36 \div 18 = 2$  hours. Start 1:00 PM + 2 hours = 3:00 PM.  
Answer: 3:00 PM

d) Unscramble math terms  
i. STATISTICS  
ii. GAMBLER

Q7  
Given:  
- Diameter (d) = 14 cm  
- Radius (r) =  $d/2 = 14/2 = 7$  cm  
-  $\pi = 22/7$   
Asked: volume of sphere  
Formula:  
Volume =  $(4/3)\pi r^3$   
Now, let's plug in the values:  
Volume =  $(4/3) \times (22/7) \times (7)^3$   
=  $(4/3) \times 22 \times 7 \times 7$   
=  $1437.33 \text{ cm}^3$   
Answer:  
The volume of the sphere is approximately 1437.33 cm<sup>3</sup>

(b) Five friends' savings (total Rs. 25,000; ratio 1:2:3:4:5)  
Given: Total = Rs. 25,000. Ratio = 1 : 2 : 3 : 4 : 5.  
Asked: Smallest share (the "1" part).



better regulated because conditions (like pH and enzymes) are controlled

#### 4) Protection

Harmful reactions (like those in lysosomes) are kept inside specific organelles to protect the rest of the cell.

#### Conclusion:

Organelles allow cell to work in an organized, efficient and safe manner — each doing its part for the survival of the cell

### MITOCHONDRIA IN HUMAN CELLS:

- (•) Mitochondria are double membrane organelles — outer membrane (smooth) and inner membrane (folded into cristae)

#### Functions

##### 1. Energy Production

Mitochondria are called powerhouse of the cell. They produce ATP by a process called cellular respiration

## (2) Regulation of metabolism

They control the cell's energy balance and play a role in metabolism of fats, carbohydrates and amino acids

## (3) Apoptosis

Mitochondria release cytochrome c that triggers cell death when a cell is damaged

## (4) Own genetic material

Mitochondria regulate calcium ions for muscle contraction and have their own genetic material

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## (b) What is doping? Discuss different types of semi-conductors?

### (c) DOPING :

Doping is the process of adding a small amount of impurity to a pure semiconductor to change its electrical conductivity.

### Types

- (1) Intrinsic Semiconductors : An intrinsic semiconductor is a pure form of semiconductor



without any impurity  
of silicon and germanium

## 2) Extrinsic Semiconductor

An extrinsic semiconductor is formed when a small amount of impurity (dopant) is added to a pure semiconductor to improve conductor

(a) N-type semiconductor (Extr. electrons)  
Made by adding pentavalent impurity such as phosphorus, antimony

(b) P-type semiconductor (Extr. holes)  
Made by adding a trivalent impurity such as boron, aluminium, gallium

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## (c) Merits and Demerits of Volcanic Eruption

Volcanic eruption are natural phenomena that can be destructive and beneficial

### Merits

1) Fertile Soil Formation Volcanic ash and lava when broken



down create mineral rich and fertile soils

## 2) Source of minerals and Resources

Volcanic area contain valuable minerals such as gold, silver, copper and diamonds. These are brought close to the surface through volcanic activity making mining possible.

## 3) Geothermal Energy :

Heat from volcanic regions is used to produce geothermal energy, a renewable and eco-friendly power source.

## Demerits

### 1) Loss of life & Property

Powerful eruptions can cause massive destruction.

### 2) Air Pollution

Volcano release ash, dust, sulfur dioxide causing air pollution.

3) Economic loss

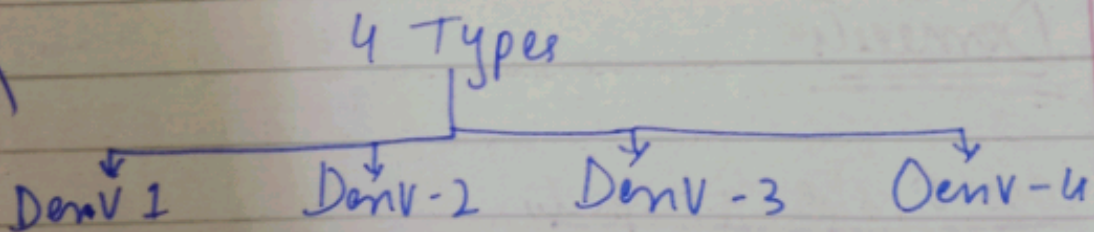
Agriculture, transport  
local businesses suffer heavily due to  
damaged land and infrastructure

(d) Dengue

Dengue is a viral disease  
spread by the bite of infected female  
Aedes mosquitoes, mainly Aedes  
aegypti

(e) Causative Agent

The disease is caused  
by dengue virus (DENV)

(f) Symptomatology

Symptoms appear (4-10 days)  
after the mosquito bite.

Mild Dengue

Sudden high Fever  
Severe headache

Severe Dengue

Severe abdominal pain  
Continuous vomiting



- |                           |                              |
|---------------------------|------------------------------|
| (c) Muscle and joint pain | Bleeding from gums and nose  |
| (c) Fatigue and weakness  | Restlessness or irritability |

### Question (4)

- (a) Write a note on plant kingdom -

Chlorophyll is a green pigment found in plants, algae and cyanobacteria. It is crucial for photosynthesis, the process by which plants convert sunlight into energy.

Chlorophyll absorbs light most efficiently in blue and red parts of the electromagnetic spectrum but reflects green light. This pigment plays a vital role in the survival of plants by extension, life on Earth.

- (b) Describe role of ribosome in protein synthesis

Ribosomes are cellular structures responsible for protein synthesis.



The read messenger RNA (mRNA) sequence and assemble amino acids into polypeptide chain which fold into protein.

Ribosomes can be found floating free in the cytoplasm or attached to endoplasmic reticulum.

Their role is essential for translating proteins that perform various cellular tasks.

(c) Discuss different method of solid waste management.

(Ans) Solid Waste management involves several methods

(i) Landfilling

Disposing of waste in a landfill.

(ii) Recycling

Converting waste into reusable materials.

(iii) Composting

Breaking down organic waste into ~~reusable materials~~ Nutrient rich soil.



Incineration:

Burning waste to reduce volume and sometimes generate energy

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(d) Define Terms

BIOFUEL:

Fuels derived from organic matter like plants and waste

ADULTERATION:

The act of adding inferior or harmful substances to food or product

HYDROSPHERE:

The part of Earth surface containing water including oceans, lakes, rivers

TROPOSPHERE:

The lower layer of Earth's atmosphere where weather occurs

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## (SECTION-II)

Q6)

b)

Camera 200 with 25% off + 6% tax

$$\text{Discount} = 200 \times 0.25 = 50$$
$$= 200 - 50 = 150$$

$$\text{Tax} = 150 \times 0.06 = 9$$

$$\text{Total} = 150 + 9 = \boxed{159}$$

(c)

Bicycle 36 km at 18 km/h at 1 pm

$$\text{Time} = \frac{\text{Distance}}{\text{speed}} = \frac{36}{18} = 2 \text{ hours}$$

$$\text{Reach at } 1 \text{ pm} + 2 \text{ hours} = \boxed{3 \text{ pm}}$$

(d)

Unscramble

STATISTICS = ALGEBRA



(7) (a) Calculate volume of a sphere with diameter 14 cm

$$\text{Radius} = \frac{\text{diameter}}{2} = \frac{14}{2} = 7 \text{ cm}$$

$$\text{Volume of sphere} = \frac{4}{3} \pi r^3$$

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

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

$$= 1437.3 \text{ cm}^3$$

(b) Find friends Total savings = 25,000  
ratio 1: 2: 3: 4: 5

$$\text{Total parts} = 1+2+3+4+5 = 15 \text{ parts}$$

$$\text{Smallest share} = \left(\frac{1}{15}\right) \times 25,000 = 1666.67$$

(c) Spot the error

2, 6, 18, 54, 162, 486

(multiplied by 3)

numbers are correctly fitting

3, 5, 7, 11, 13, 17 complete