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

PART - II

SECTION - A

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 portion, explain analytical ability questions in words. For a 5-mark part, show all steps and provide clear explanations.

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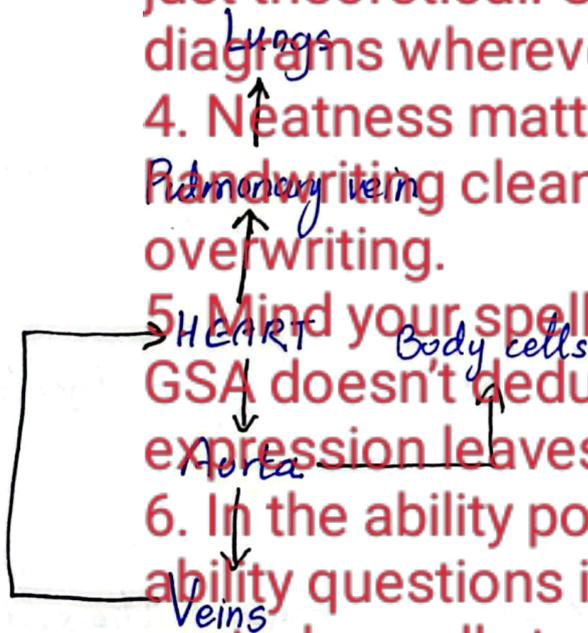

Question 4(a)

Explain the role of heart and blood vessels in circulation.

Role of heart

The heart is a muscular organ that functions as a pump. It circulates blood throughout the body, ensuring that oxygen-rich blood reaches the tissues and organs, while carbon dioxide and other waste products are transported to the excretory organs for removal.

Blood vessels

Blood vessels are a closed network of arteries, veins, and capillaries. Arteries carry blood away from the heart and return it; capillaries allow the exchange of gases, nutrients, and wastes between blood and body cells, completing the circulatory process.

Lungs
↑
Pulmonary vein
↑
→ HEART   Body cells
↓   ↑
Aorta
↓
Veins

40/2

(b) What is cyclone? Describe the formation of cyclone.

Cyclone

A cyclone is a large-scale weather system characterized by strong winds rotating around a low pressure center. In the Northern Hemisphere, winds rotate anti-clockwise, while in the southern Hemisphere, they rotate clock-wise. Cyclones are often accompanied by heavy rainfall, thunderstorms, and sometimes storm surges along coasts.

Formation of cyclone

1) **Warm ocean water**

Cyclones form over warm tropical oceans where water temperature exceeds 26-27°C, providing energy through evaporation.

2) **Low-pressure area**

Heating of the ocean surface causes air to rise, creating a low-pressure area.

3) **Converging winds**

Surrounding air rushes toward the low-pressure zone. Due to the Coriolis effect, the winds begin to rotate.

4) **Cloud formation**

Rising moist air cools and condenses, forming thick clouds and heavy rainfall.

5) **Mature cyclone**

Continuous heat and moisture supply strengthen the system, forming a well-defined rotating cyclone with a calm eye at the center.

Cloud and Rain

↑

Rotating winds

↑

Low Pressure (Eye)

↓

Warm ocean surface
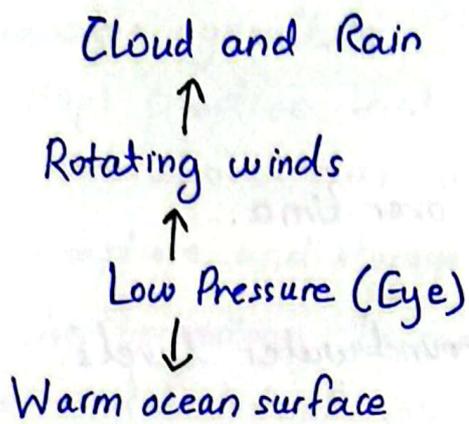
C) Enlist the function of

i) Carbohydrates

The provide quick energy for body activities, and maintain proper brain function.

ii) Proteins

They help in growth, repair body tissues, and formation of enzymes and hormones.

iii) Fats

They serve as a long-term energy store and help in the absorption of fat-soluble vitamins.

iv) Calcium

It strengthens bones and teeth, and supports proper functioning of nerves and muscles.

v) Iron

It is essential for formation of hemoglobin, and helps in oxygen transport in the blood.

d) How remote sensing can be employed for environmental purposes?

Remote sensing

It is the technique of obtaining information about the Earth's surface without direct contact, typically using satellites or aerial sensors. It plays a vital role in environmental management.

Applications

1) Monitoring deforestation

It tracks changes in forest cover over time.

2) Water resource management

It assesses lakes, rivers, and ground water levels.

3) Pollution detection

It detects oil spills, air pollution, and land contamination.

4) Disaster management

It helps in early warning and assessment of floods, cyclones, and landslides.

5) Land use planning

It supports sustainable agriculture, urban planning, and ecosystem conservation.

Question 3(a)

How global warming can be reversed?

Reversing global warming

Global warming can be mitigated and partially reversed through a combination of policy measures, technological solutions, and individual actions.

1) Reduce greenhouse gas emissions

Shift to renewable energy sources like solar, wind, and hydro; promote energy efficiency in industries, transport, and households.

2) Afforestation and reforestation

Planting trees increases carbon sequestration, absorbing carbon dioxide from the atmosphere.

3) Sustainable agriculture

Adopt practice that reduce methane and nitrous oxide emissions, such as crop rotation or organic farming.

4) Carbon capture and storage (CCS)

Use technology to capture carbon dioxide from power plants and industrial sources and store it underground.

5) Public awareness and policy support

Encourage sustainable lifestyles, reduce wastes, and enforce environmental regulations.

b) Define ceramics . . . . ceramics.

Ceramics

Ceramics are non-metallic inorganic solids made by heating and then cooling natural materials like clay, silica, and alumina. They are hard, brittle, and resistant to heat and chemicals.

Properties of ceramics

1) Hard and brittle

They can withstand compressive forces but break easily under tension.

2) High melting point

They are stable at very high temperatures.

3) Poor conductors

They are electrically and thermally insulating.

4) Chemical resistance

They do not corrode or react easily with acids and bases

5) Low density

    They are light-weight in many forms.

Application of ceramics

1) It is used in construction such as bricks, tiles, and cement etc.

2) It is used in electrical industry eg; insulators spark plugs, and circuit components.

3) Used in crockery, porcelain, and glassware.

4) Also used in dental implants, bones substitutes, and in surgical instruments.

5) Also used in refigerators and cutting tools etc.

c) Explain the working — — — — — — phones.

Working of optical fibers

    Optical fibers are thin strands of glass or plastic that transmit light signals over long distances. They operate on the principle of <u>total internal reflection</u> where light entering the fiber reflects repeatedly within the core without escaping. This allows high-speed transmission of data, including internet telephones, and cable signals with minimum loss.

Working of mobile phone

⇒ Mobile phones convert voice (sound energy) into electrical signals which are then transmitted as radiowaves to the nearest cell tower.

⇒ The tower relay the signal through a network of towers and switching centers until it reaches the receipient's device.

⇒ The receipient's device converts the signal back into sound or data.

⇒ This enables wireless communication over short and long distances.

d) Define the following :

1) Food Additives

Substances added to food to enhance taste, colour, texture, or shelf life. e.g; monosodium glutamate (MSG), food colouring

2) Food Preservatives

Chemicals used to prevent spoilage and microbial growth in food. e.g., Sodium benzonate, citric acid.

3) Food Adulteration

Deliberate addition of inferior and harmful substances to food to increase quantity or reduce cost. e.g., water in milk, starch in flour.

4) Food contaminants

Unwanted harmful substances accidently present in food. e.g; pesticide residue, heavy metals.

SECTION-B

Question 6(a)

1) My brother's only daughter

Ahsan's brother's only daughter = Ahsan's niece.

2) That niece = grand-daughter of the woman.

If the woman's granddaughter = Ahsan's niece. then the woman must be Ahsan's mother.

(b) Given

$\Rightarrow$ Ratio of length : breadth = 3:2

Let L = 3x , B = 2x.

$\Rightarrow$ Speed of cyclist = 12 km/h

$\Rightarrow$ Time for 1 round = 8 minutes = $\frac{8}{60}$ = $\frac{2}{15}$ hours

Perimeter

Distance travelled in one round = perimeter of rectangle.

Distance = Speed × Time

$$= 12 \times \frac{2}{15} \text{ km} = \frac{24}{15} = 1.6 \text{ km} = \boxed{1600 \text{ m.}}$$

Perimeter formula

$$\text{Perimeter} = 2(L+B) = 2(3x+2x) = 10x$$

$$10x = 1600$$

$$x = \frac{160}{1}$$

$$x = 160 \text{ m.}$$

Length and breadth

$$L = 3x = 480 \text{ m.} \qquad B = 2x = 320 \text{ m.}$$

$$\text{Area} = L \times B = 480 \times 320$$

$$= \boxed{153,600 \text{ m}^2}$$

c) Let the ten's digit = x

Let the unit's digit = x + 2

So, the number = 10x + (x+2) = 11x + 2

Sum of the digits

$$\text{Sum} = x + (x+2) = 2x + 2.$$

The product of the number and the sum of its digit

$$= 144$$

$$(11x + 2(2x + 2) = 144.$$
$$\Rightarrow 2(11x + 2)(x + 1) = 144$$
$$\Rightarrow (11x + 2)(x + 1) = 72.$$

$$11x(x + 1) + 2(x + 1) = 72$$
$$11x^2 + 11x + 2x + 2 = 72$$
$$11x^2 + 13x + 2 - 72 = 0$$
$$11x^2 + 13x - 70 = 0 \quad \rightarrow \text{quadratic equation.}$$

Solving quadric equation:

$$11x^2 + 13x - 70 = 0$$

$$x = \frac{-13 \pm \sqrt{13^2 - 4(11)(-70)}}{2 \cdot 11} = \frac{-13 \pm \sqrt{169 + 3080}}{22}$$

$$= \frac{-13 \pm \sqrt{3249}}{22} \qquad \therefore \sqrt{3249} = 57$$

$$x = \frac{-13 + 57}{22} = \frac{44}{22} = 2.$$

$$x = \frac{-13 - 57}{22} = \frac{-70}{22} = \text{(negative, not possible)}$$

Ten's digit $x = 2$

Unit's digit $x + 2 = 4$

d) Given

LCM of two numbers $= 48$

Ratio of numbers $= 2:3$

Let the numbers be $2x$ and $3x$

LCM formula for two numbers

$$LCM = \frac{\text{Product of numbers}}{\text{Greatest common divisor}}$$

$$LCM = \frac{(2x)(3x)}{GCD \text{ of } 2x \ \& \ 3x} = 48$$

GCD of $2x$ and $3x$

$$LCM = \frac{6x^2}{x} = 6x = 48$$

$$x = \frac{48}{6} = 8$$

$$2x = 2 \cdot 8 = 16 \quad , \quad 3x = 3 \cdot 8 = 24$$

Sum of the numbers

$$16 + 24 = \boxed{40}$$

Question 7 (a)

Given

40% of first number $= \frac{2}{3}$ of second number

Let the numbers be x and y.

$$0.4x = \frac{2}{3}y$$

$$x:y = \frac{2}{3} \div 0.4 = \frac{2/3}{2/5}$$

$$x:y = \frac{2}{3} \times \frac{5}{2} = \frac{5}{3} \Rightarrow \boxed{5:3}$$

b) Let the cost price of one ball = Rs. x

Cost price of 17 balls = $17x$

Selling price of 17 balls = Rs 720

Loss = cost price of 5 balls = $5x$

$$Loss = Cost\ price - Selling\ price$$

$$5x = 17x - 720$$

$$17x - 5x = 720$$

$$12x = 720$$

$$x = 60$$

Cost price of one ball = Rs 60

c)

Let the present age of the son = x years

Then the present age of the man = $x + 24$ years.

In two years, man's age will be twice the age of the son.

$$(x + 24 + 2) = 2(x + 2)$$

$$x + 26 = 2x + 4$$

$$26 - 4 = 2x - x$$

$$x = 22$$

Present age of son = 22 years

d)

Rashid's typing speed = 32 pages in 6 hours

$$Speed = \frac{32}{6} = \frac{16}{3}\ pages/h.$$

Kamran's typing speed = 40 pages in 5 hours

$$Speed = \frac{40}{5} = 8\ pages/h$$

Time to type 110 pages:

Time $= \dfrac{110}{40/3} = \dfrac{110 \times 3}{40}$

$= \dfrac{330}{40}$

$= \boxed{8 \cdot 25 \text{ hours}}$