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 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! 🌟

(a) $\frac{1}{10} + \frac{1}{15} - \frac{1}{30}$

$\frac{3}{30} + \frac{2}{30} - \frac{1}{30}$

$\frac{4}{30} = \frac{2}{15} = 7.5$

$\frac{30}{15}$

7 hours 30 minutes | Ans:-

(b) Y increase 10%

Z decrease 25%

$0.1 \times 5k = 0.5k$

$5 + 0.5 = 5.5k$

25% of 7k = 1.75k

$7k - 1.75k = 5.25k$

$4k + 5.5k + 5.25 = 14.75$

$14.75 = 169500$

$\frac{169500}{14.75} = 11500$ Ans

$X = 4k = 4 \times 100$

AA

(C) First 3/5 in 60 days → 1 day work = small pe piece.

Next 2/5 in 20 days → 1 day work = twice as fast (~~becom~~ because same amount of work in fewer day, and more workers)

$$w + 10 = 2w \Rightarrow w = 10$$

Orginal workers = 10 Ans:

dj

Add given asked solution formula and answer

a) (Difference between a Star and A Planet)

Star

Definition: A star is a celestial body that produces its own light and heat by nuclear fusion.

Light and Heat: Emits lights and heat.

Examples: Sun, Sirius, Betelgeuse.

Planet

Definition: A planet is a celestial body that revolves around a star and does not produce its own light.

Light and Heat: Does not emit light; reflects the light of a star.

Example: Earth, Mars, Jupiter.

Lifecycle of a star (Nebula → Black Hole)

1. Nebula - A Cloud of gas and dust ; the birth place of a star.

2. Protostar:- Gravity pulls gas together ; pressure and temperature rise.

3. Main Sequence Star → Hydrogen fuses into helium ; the star shines steadily (e.g sun)

4. Red/Grai Giant/Supergiant - Hydrogen run out ; star expands and cools.

5. Final Stages: Depends on mass.
   - Low-mass star → White dwarf → eventually cools.
   - High-mass star → Supernova → can form a Neutron star or Black Hole.

Black Hole: Extremely dense object formed when a very massive star collaspe collapses after a Supernova ; gravity is so strong that not even light can escape.

Definition: Semiconductors are materials that have electrical conductivity between conductors (like metals and insulators (like rubber)

Types of Semiconductors

N-type

Doping element: Doped with elements have extra electrons (e.g Phosphorus)

Charge carries: Electrons (negative charge)

Conducitivity: Electrons move to conduct current.

P- Type

Doping element: Doped with elements having electron holes (e.g Boron)

Charge carries: Holes (positive Charge)

Conducitivity: Holes move to conduct current

(Applications of Semiconductors)

1. Diodes and Transistors: Use in electronic circuits for amplification and switching.

2. Solar Cells: Convert sunlight into electricity.

(C) Global Warming

Definition: Global warming is the gradual increase in the Earth's average temperation due to the buildup of greenhouse gases in the atmosphere.

Mechanism of the Greenhouse Effect.

1. Sunlight reaches Earth: Solar radiation passes through the atmosphere and warms the Earth's surface.

2. Earth emits heat: The Earth radiates heat (infrared radiation) back toward space.

3. Trapped heat: Greenhouse gases in the atmosphere trap some of this heat, preventing it from escaping into space.

4. Result: The trapped heat raises the Earth's temperature causing global warming.

Three Major Greenhouse Gases

1. Carbon dioxide (CO_2) from ~~build~~ burning fossil fuels.
2. Methane (CH_4) from livestock, landfills, and natural gas.
3. Nitrous oxide (N_2O) from fertilizers and industrial activities.

(D)

- Definition: A tsunami is a series of very large ocean waves caused by sudden disturbances under sea, such as earthquakes, volcanic eruptions or landslides. These ~~are~~ waves can travel at high speeds across the ocean and cause devastation on control areas.

Natural Processes that Trigger a Tsunami

1. Underwater Earthquakes:
   Sudden ~~moment~~ movements of tectonic plates under the ocean can displace charge amount of water, creating massive waves.
2. Volcanic Eruptions:
   Explosive volcanic eruptions under or near the ~~ocean~~ sea can push water upwards, generating tsunami waves.
3. Underwater landslides:
   Large amounts of rock or sediment collapsing into the ocean can distrub water, producing waves.

4. Meteorite Impacts:

Rarely, large meteorites hitting the Ocean can trigger tsunamis.

(Q4)

A) **The Rock Cycle**

Definition: The rock cycle is a continuous natural process in which rocks are formed, broken down, and transformed from one type to another over time due to heat, pressure, weathering, and erosion.

Process:

1. Igneous rocks ~~from~~ form from cooling and ~~solida~~ solidification of magma or lava.

2. Weathering and ~~ersion~~ erosion break rocks into small pieces → Sediments.

3. Sedimentary rocks form when Sediments are Compressed and cemented.

4. Metamorphic rocks from when existing rock are subjected to heat and pressure without ~~m~~melting.

5. Over time, rock can ~~m~~melt into magma → cycle continues.

Difference between Igneous, Sedimentary, and Metamorphic Rocks

Igeneous Rock

Formation: From Cooling of magma and lava

Texture: Often hard and crytalline

Example: Granite, Basalt.

Sedimentary Rock

Formation: From Compaction and cementation of Sediments.

Texture: often layereed, may Contain fossils.

Example: Sandstone, limestone.

Metamorphic Rocks

Formation: From heat and pressure on existing rocks.

Texture: Dense, banded, or foliated.

Example: Marble, Slate.

(B)

Acid Rain

Definition: Acid rain is rainwater that has become acidic due to the presence of sulfur dioxide (SO_2) and nitrogen oxides (NO_x) in the atmosphere. It pH is usually below 5.6, making it harmful to the environment.

Chemical Reactions Involved

1. Formation of Sulfuric Acid (H_2SO_4):

$$SO_2 + H_2O \rightarrow H_2SO_2 \text{ (sulfurous acid)}$$

$$SO_3 + H_2O \rightarrow H_2SO_4 \text{ (sulfuric acid)}$$

2. Formation of Nitric Acid (HNO_3):

$$2NO_3 + H_2O \rightarrow HNO_3 + HNO_2$$

Those acids mix with rainwater, forming acid rain.

Harmful Effects of Acid Rain

1. Aquatic life:
   Lowers pH of rivers and lakes → fish and other acquatic organism die.
2. Vegetation:
   Damages leaves and soil nutrients → reduces plant growth.
3. Other Effects:
   Corrodes buildings, ~~momu~~ monuments, and metal structures.

Summary:

Acid rain forms when industrial gases react with water to produce acids. It is harmful to ~~acquatic~~ aquatic life, plants, soil, and man-made structures.

(Role of Remote Sensing and GIS)

1. Remote Sensing (RS)

Definition: Remote Sensing is the process of collecting information about the Earth's surface from satellites or aircraft without physical contact.

Role in Enivornmental Monitoring

Detects deforestation, pollution, and land use changes.

Monitors water bodies, soil erosion, and climate changes.

Role in Disaster Management:

Identifies areas at risk for floods, earthquakes or hurricanes.

Tracks the movement and impact of natural disasters in real-time.

2. Geographic information System (GIS)

Definition: GIS is a system for mapping, storing, analyzing, and visualizing spatial data.

Role in Environmental Monitoring.
Maps environmental changes over time
Helps in planning conservation and land management

Role in Disaster Management
~~Her Helps Place evacuation~~
Helps plan evacuation routes and emergency responses.
Analyzes risk zones and predicts potential impacts.

(D) Solid Waste Management (SWM)

Definition: Solid waste management is the process of collecting, treating, recycling, and disposing of solid waste in a way that protects the environment and human health.

Goal: Reduce pollution, conserve resources, and maintain clean urban areas.

Steps in Solid Waste Management

1. Collection:
   Gathering waste from homes, office, and streets.

2. Segregation:
   Separating biodegradable, ~~reye~~ recyclable, and hazardous waste.

3. Transportation: Moving waste to treatment or disposal sites.

4. Treatment
   Methods like composing, ~~reye~~ recycling, or ~~intere~~ incineration.

5. Disposal:
Safe disposal in landfills or sanitary sites.

Environmental Hazards of Improper Disposal

1. Water Pollution:
Leachate from waste can contaminate rivers, lakes, and groundwater.
2. Air Pollution:
Open burning of waste releases [illegible] greenhouse gases and smoke.
3. Soil Pollution:
Hazardous chemicals in waste can degrade soil fertility.
4. Health Hazards:
Spreads diseases like Cholera, dengue, and respiratory problems.
5. Biodiversity loss:
Animals and plants, near waste sites can be harmed or killed.