Dos and Don'ts for Generaral Science & Ability Paper

Hi there, you've done well. Know that acquiring knowledge is one thing and reproducing it in paper according to what's asked is another. There are a few things I would like to highlight.

1. A 5 marks part requires 2 sides(not more than that) of a paper. Know that there can be two or three parts of a question and their marks are divided accordingly. So, address all of them in a just manner.
2. Focus on time management. You get 35 minutes to solve one question and about 8 minutes per 5 mark part. Manage your time accordingly.
3. You need to understand that your paper is supposed to look more scientific than theoretical. So, add flowcharts and diagrams where required.
4. Your handwriting and neatness can be really impactful. Avoid cutting and overwriting.
5. Focus on your spellings and your grammar. Here, in GSA there's no deduction in marks but your expression will definitely create an impact.
6. In ability portion, give explanation for analytical ability question in words. You need to understand that a 5 mark part requires all steps written and explained.

Good luck for CSS 2025. You're gonna rock in sha Allah. :)

COP-29 should consider the following measures:

Measures Should be taken:

1. Enhanced climate finance:

- Increased financial support from developed countries to developing nation to help them mitigate and adapt to climate change.
- Establish a clear and transparent framework for all the allocation and disbursement of climate finance.

2. Capacity building and technology transfer:

- Facilitate the transfer of clean and sustainable technologies to developing countries.
- Invest in capacity-building initiatives to enable these nations to effectively utilize and maintain new technologies.

3. Adaptation and Resilience:

- Develop and fund robust adaptation strategies that address the specific vulnera-

bilities of developing Countries.

- Support the Construction of resilient infrastructure to withstand impacts.

4. Loss and Damage mechanism:

- Strengthen the loss and Damage mechanism to provide timely financial and technological support to countries experiencing severe climate impacts.
- Ensure that funding for loss and damage is additional to existing climate finance commitments.

5. Inclusive and Equitable climate Action:

- Promote inclusive decision-making processes that involve representatives from the least developed and most vulnerable Countries.

Ensure that climate policies consider the social and economic context of developing nations to

avoid axecerbating inequalities.

6. Renewable Energy Expansion:

- Invest in renewable energy projects in developing countries to reduce reliance on fossil fuels.
- Support initiatives that provide access to clean energy for rural and underserved populations.

7. Sustainable Agriculture and Land Use:

- Promote sustainable agricultural practices that enhance food security and reduce emissions.
- Support reforestation, afforestation, and sustainable land management projects.

8. Climate education and awareness:

- Increase awareness and education on climate change impacts and solutions at the community level.

Support initiatives that empower local communities to engage in climate action.

By adopting these measures, Cop-29 can address the pressing needs of developing and least developed countries, ensuring that global climate action is effective and equitable.

(b)

1. Arteries:

Function:

Arteries carry oxygenated blood away from the heart to the tissue and organs of the body. The only exception is the pulmonary artery which carries deoxygenated blood from the heart to the lungs.

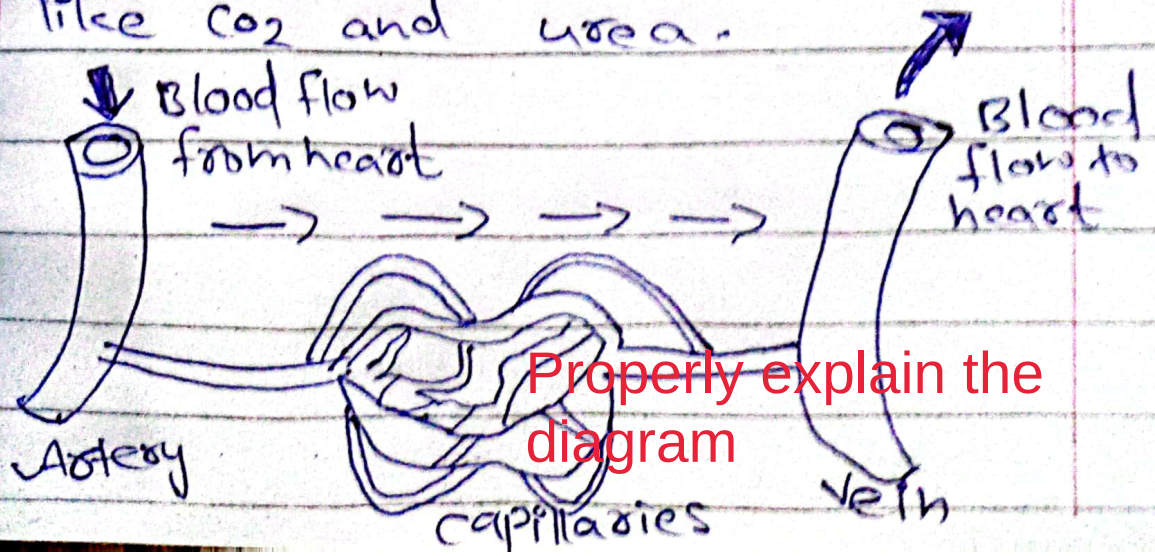
DATE : DAY :

2. Veins:

Function: Veins carry deoxygenated blood from the tissues back to the heart. The only exception is the pulmonary vein, which carries oxygenated blood from the lungs to the heart.

3. Capillaries:

Function: Capillaries are the smallest blood vessels and serve as the sites of exchange between the blood and tissues. They deliver oxygen and nutrients to cells and remove waste products like CO_2 and urea.



Properly explain the diagram

(c)

Why do atoms forms chemical Bond

Atoms form chemical bond to achieve greater stability. The stability of an atom is largely determined by its electron configuration, specially or specifically the arrangement of electrons in its outermost shell (valence shell).

There are some reasons of why atoms form chemical bond:

1. Octate rule: Many atoms strive to have eight electrons in their valence shell, a configuration associated with the stable noble gases. Atoms will share, donate or accept electrons to achieve a full outer shell.

2. Energy minimization: Atoms bond to reach a lower energy state. By bonding, atoms can achieve

a more stable electron configuration, which results in lower potential energy.

3. Electrostatic Attraction:

In ionic bonds, atoms transfer electrons, resulting in positively and negatively charged ions that attract each other due to electrostatic forces.

In covalent bond, atoms share electrons to fill their valence shells, leading to a stable electron configuration.

Explain structure of water?

Structure of water

Water (H_2O) is a molecule composed of two hydrogen atoms and one oxygen atom, and it exhibits unique structural and chemical properties:

1: Molecular formula: H_2O

2: Bonding :

- **Covalent Bonds:** Each hydrogen atom forms a single covalent bond with the oxygen atom by sharing a pair of electrons. This result in two O–H bonds.
- **Polar nature:** oxygen is more electronegative than hydrogen, meaning it attracts the shared electrons more strongly. This creates a partial negative charge ($\delta-$) on the oxygen atom and a partial positive charge ($\delta+$) on the hydrogen atoms, making water apolar molecule..

3. Molecular shape:

- **Bent shape:** The water molecule has a bent or

V-shaped structure with an angle of about 104.5 degrees between the hydrogen-oxygen-hydrogen bonds. This shape is due to the two lone pairs of electrons on the oxygen atom that repel the bonded hydrogen atoms, pushing them closer together.

4. Hydrogen Bonding:

- Water molecules can form hydrogen bonds with each other due to the attraction between the partial positive charge on the hydrogen atom of one water molecule and the partial negative charge on the oxygen atom of another water moleale.

This hydrogen bonding is responsible for many of water's unique properties, such as its high boiling point, surface tension,

and its ability to dissolve many substances.

(d)
Conductors:

Definition:

Conductors are material that allow the free flow of electric current due to the presence of free electrons or other charge carriers.

Example:

(Cu) Copper is a common conductor used in electrical wiring because of its high electrical conductivity and relatively low cost.

Semiconductors:

Definition:

Semiconductors are

material with electrical conductivity between that of conductor and insulators. Their conductivity can be modified by adding impurities (dopping) or by applying electric fields, light or heat.

Example:

(Si) Silicon is the most widely used semiconductor material essential in the manufacture of electronic devices such as diodes, transistors, and integrated circuits.

Metals

Definition:

Metals are elements or alloys that exhibit high electrical and thermal conductivity, malleability, ductility, and characteristic luster. Metals generally have free electrons that allow them to conduct

heat and electricity efficiently.

Example:

Iron (Fe) is a versatile metal used in construction, manufacturing, and many other industries due to its strength and abundance.

Plastics

Definition:

Plastics are synthetic or semi-synthetic organic compounds that are malleable and can be molded into solid objects. They are polymers made from long chains of molecules, which can be tailored to have various properties.

Example: Polyethylene (PE) is a common plastic used in packaging, containers, and household products due to its durability and flexibility.

Ceramics

Definition:

Ceramics are non metallic, inorganic materials that are typically hard, brittle, and resistant to heat and corrosion. They are usually made by heating natural minerals at high temperature.

Example:

Porcelain is a type of ceramic used in making dishes, tiles and sanitary ware because of its strength, translucence, and high resistance to thermal shock.

(Q NOS 3)

(a)

Artificial intelligence (AI):

Refers to a simulation of human intelligence in machines

that are programmed to think and learn like humans. These systems can perform tasks typically requiring human intelligence, such as recognizing speech, making decisions, solving problems, and understanding natural problems, and understanding natural language. AI encompasses a variety of subfields, including machine learning, robotics, natural language processing, and computer vision.

The possibility of AI outsmarting humans can be considered from various perspectives.

1: Task-specific intelligence:

- **Current capabilities:**

In specific tasks, AI can already surpass human performance. For example,

Address all parts

(b)

Rock formation: Refers to the processes through which different types of rocks are created. This can occur through various geological processes such as cooling of molten magma, deposition of sediments, or alteration of existing rocks under heat and pressure.

Rock Cycle:

The rock cycle is continuous and dynamic process describing the transformation of rocks through various geological processes over time. It involves the formation, breakdown, and

reformation of rocks. The main stages of the rock cycle are:

1. **Igneous rock formation**

- **process:** Magma cools and solidifies either beneath the Earth's surface (intrusive) or on the surface (extrusive).

Example: Granite (intrusive), Basalt (extrusive).

2. **Weathering and Erosion:**

- **Process:** Rocks are broken down into smaller particles by weathering (physical, chemical, and biological) and then transported by erosion (wind, water, ice).

3. **Sedimentation:**

- **Process:** sediments are deposited in layers, often in bodies of water, and accumulate over time.

4. **Sedimentary rock formation**

- **Process:** Sediments are compacted and cemented

to form sedimentary rocks.

Example: sandstone, limestone.

5. Metamorphism:

process: Existing rocks are subjected to high heat and pressure, causing physical and chemical changes to form metamorphic rocks.

Example: Marble (from limestone), schist (From shale).

6. Melting:

process: Rocks are melted into magma due to extreme heat, completing the cycle as the magma cools to form new igneous rocks.

Types of Rocks:

Rocks are classified into three main type based on their formation processes.

1. IGneous Rocks:

formation: from the cooling and ~~sedi~~ solidification of magma or Lava.

Types:

- Intrusive (Plutonic): Formed below the Earth's surface. Example: Granite.
- Extrusive (volcanic): Formed on the Earth's surface Example: Basalt.

2. Sedimentary Rocks:

formation: From the accumulation and lithification of sediments.

Types:

clastic: formed from the accumulation and lithification of sediment OR Formed from the mechanical weathering debris. Example: Sandstone.

chemical: Formed from precipitation of minerals from water. Example: Limestone.

organic: Formed from accumulation of plant or animal debris. Example: Coa

3. Metamorphic Rocks:

Formation: Form the alteration of existing rocks under heat and pressure.

Types:

- Foliated Metamorphic Rocks: Have a banded or layered appearance due to pressure Example : Schist.
- Non-Foliated Metamorphic Rocks: Do not have a banded texture. Example= Marble.

(c)

Carbohydrates: Carbohydrates are organic molecules composed of carbon (C), hydrogen (H), and oxygen (O) atoms, typically with a hydrogen to oxygen atom ratio of 2:1. Similar to water (H_2O). They are one of the primary sources of energy for living

organisms and play a crucial role in various biological processes. Carbohydrates are classified based on their structure and complexity into three main types:

Types of Carbohydrates:

- Monosaccharides
- Disaccharides
- Polysaccharides.

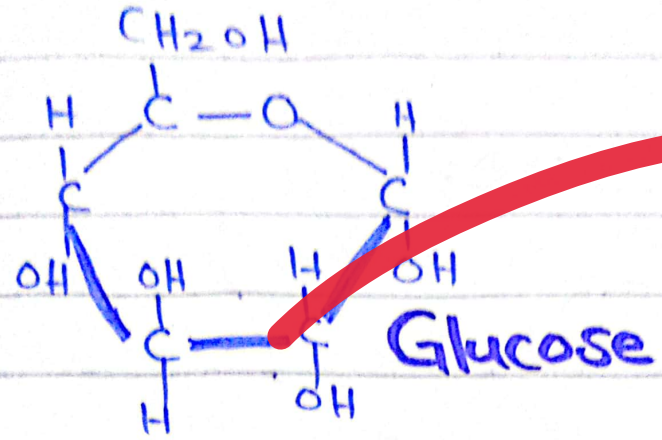
1. Monosaccharides:

Definition: The simplest form of carbohydrates, consisting of single sugar molecules. They are the building blocks for more complex carbohydrates.

Example:

- Glucose: The primary energy source of cells.
- Fructose: Found in fruits and honey.
- Glactose: A component of lactose, found in milk.

Structure: Typically have a backbone of 3-7 carbon atoms and exist in either linear or ring form.



Glucose

2. Disaccharides:

Definition: Carbohydrates composed of two monosaccharides molecules linked by a glycosidic bond.

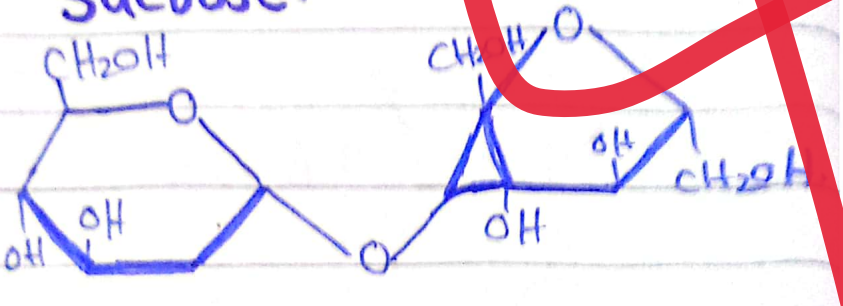
Examples:

- Sucrose: Compound table sugar. Composed of glucose and fructose.
- Lactose: Found in milk, Composed of Glucose and Galactose.

Maltase: Formed from two glucose molecules found in germinating grains.

Formation: Formed through a dehydration reaction where a water molecule is removed.

Sucrose:



3. Polysaccharides:

Difinition: Complex carbohydrate Consisting of long chains of monosaccharide units linked by glycosidic bonds.

Example:

- **Starch:** A storage form of glucose in plants found in food like potatoes and rice
- **Glycogen:** A storage form of glucose in ~~plant~~ animals primarily stored in liver

Give definition of balanced diet as well

(d)

Benefits of balance Diet:

A balance diet which includes a variety of foods in the right proportions to provide essential nutrients, offers numerous benefits for overall health and well-being. Here are some benefits.

1. Optimal Nutrient Intake:

A balance diet ensures that you get all the essential nutrients, including vitamins, minerals, proteins, fats and carbohydrates, necessary for the body's proper functioning. This helps in maintaining energy levels, supporting growth and development, and promoting overall health.

2. Maintain Healthy weight:

Eating a balance diet helps in maintaining a healthy weight

by providing the right amount of calories to meet your body's energy needs without excessive intake. This can prevent obesity and related health issues.

3. Reduces the Risk of Chronic Diseases: A diet rich in fruits, vegetables, whole grains, lean proteins, and healthy fats can lower the risk of chronic diseases. Such as heart disease, diabetes, hypertension, and certain cancers. It helps in managing blood pressure, cholesterol levels, and blood sugar levels.

4. Improve Digestion: A balanced diet that includes adequate fiber from fruits, vegetables, and whole grains promotes healthy digestion, preventing issues like constipation and

maintaining a healthy gut microbiome.

5. Boast Immune system: Nutrients like vitamin A, C, D, E and minerals such as zinc and selenium found in a balanced diet are essential for a strong immune system, helping the body to fight off infections and illnesses.

6. Inhance Mental health: Certain nutrients, such as omega-3 fatty acids, B vitamins and antioxidants, are known to support brain health and improve mood. A balanced diet can reduce the risk of mental health disorders such as depression and anxiety.

1. Promote healthy skin and Hair: Nutrients like vitamins A, C, E, and biotin, along with adequate

10. Improve Sleep quality: Certain foods and nutrients can improve health or sleep quality by regulating sleep patterns. A balanced diet helps in maintaining a healthy balance of neurotransmitters and hormones that control sleep.

(Section-II)

(Q No 6)

(a)

(Solution)

To determine the annual percentage increase in the population of the village from 18,000 to 22,500 over a decade (10 years), we can use the formula for Compound annual growth rate (CAGR):

DATE: DAY:

$CAGR = \left(\frac{Pt}{Po}\right)^{\frac{1}{t}} - 1$

Pt is the final population (22,500)

Po is the initial population (18000)

t is the number of years (10)

$\frac{Pt}{Po} = \frac{22,500}{18,000} = 1.25$

$(1.25)^{\frac{1}{10}}$ Take the 10th root of ratio

Subtract 1 to find the anual growth.

$(1.25)^{1/10} - 1$

$(1.25)^{1/10} \approx 1.02247$

$1.02247 - 1 = 0.02247$

Convert decimal to a percentage

$0.02247 \times 100 \approx 2.247\%$.

Therefore, the annual percentage is approximately 2.247% per year.

(b)

Sol:

To determine how many units can be made in 12 days with the help of 18 machines we first need to find the production rate

DAY:

per machine per day based on the given data and then use the ratio to calculate the production for the new condition.

Units	Days	Machines
600	9	20
x	12	18

$$\frac{x}{600} = \frac{12}{9} \times \frac{18}{20}$$

$$\frac{x}{600} = \frac{6}{5}$$

$$\frac{x}{600} = \frac{6}{5}$$

$$x = \frac{6}{5} \times 600^{120}$$

$$x = 6 \times 120$$

$$\boxed{x = 720 \text{ units}}$$ Ans.

DATE: DAY:

(C)

Sol:

speed of car = 450m

Time taken = 1 min (60sec)

speed of car = Distance : Time

$450m : 60s = \frac{450m}{60s}$

$= 7.5 m/s$

speed of train = Distance : Time

$\frac{(691cm)\ 6900m}{(245\ min)\ 2700sec} = 25.56 m/s$

Ratio of the speed of the car to the speed of the train is:

$Ratio = \frac{\text{speed of car}}{\text{speed of train}} = \frac{7.5 m/s}{25.56 m/s}$

Divide both numerator and Denominator by 7.5

$Ratio = \frac{7.5 \div 7.5}{25.56 \div 7.5} = \frac{1}{3.408}$

Ratio 1 : 3.408 Ans.

DATE : _____ DAY: _____

(d)

Sol:

Perimeter = Number of sides × length of each side

for a pentagon

- The number of sides (n) = 5
- Length of each side(s) = 15cm

(P) perimeter is = 5 × 15cm

P = 75cm Ans.

(Q No 8)

(a)

Sol:

BROTHER → QDGSNQA

1. B → Q

B is 2nd letter, Q is the 17th letter This suggest +15 position (2+15=17)

2. R → D

R is 18th letter, D is 4th letter it suggest -14 position (18-14=4)

3. O → G

O is the 15th letter, G is 7th letter. This

DATE DAY

Suggest -2 position (15-2=7)

4. T → S

T is the 20th letter, S is 19th letter.

This suggest -1 position (20-1=19)

5. H → N

H is 8th letter, N is 14th letter

This suggest +6 position 8+6=14

6. E → Q

E is 5th letter, Q is 17th. this

suggest +12 position (5+12=17)

7. R → A

R is 18th letter and A is 1st. this

suggest -17 position (18-17)=1).

To code sister similarly

1. S is the 19th letter shift +15

= 19 +15 = 34 which is H.

2. I is the 9th letter. shift -14

= 9 - 14 = -5 which is U.

3. S is the 19th [illegible] 19-8 = 11 (k)

4. T is 20th letter => 20-1=19 (S)

5. E is 5th letter => 5+6 = 11 (K)

6. R is 18th letter = 18+12=30 (D)

so SISTER called as HUKSKD.

DAY:

(b)

Sol :-

1 (1 × 1 + 1 = 2)

2 (2 × 2 + 2 = 6)

6 (6 × 3 + 3 = 21)

21 (21 × 4 + 4 = 88)

Missing part is 88.

(c)

Naseer's path

10 feet east, 3 feet south, 14 feet west. His final position = 14 − 10 = 4 feet west, 3 feet south

Using Pythagorean theorem

Distance = $\sqrt{4^2 + 3^2}$

$\sqrt{16+9} \Rightarrow \sqrt{25} = 5$ feet away from Point A.

(d)

Sol:

Total temperature for the week = 33 × 7 = 231 °C

Total temperature for the first three days = 30 × 3 = 90 °C

Total temperature for last 3 days = 35 × 3 = 105 °C

90 + T + 105 = 231 ⇒ T + 195 = 231 ⇒ T = 231 − 195 = 36

Temp of 4th day = 36°C