Q.NO. 3 (c) State some of the merits and demerits of global warming.

Here are some merits of global warming.

Merits

(1) Increased temperature and longer growing season can lead to increased agricultural productivity.

(2) Improved navigation: Melting of Sea shipping routes and increased accessibility to remote areas.

(3) Reduced energy consumption: Warmer winters can lead to reduced energy consumption, costs...

(4) Increased... and show can provide... accessible for exploration, research, and tourism

(5) New economic opportunities: A warmer Arctic region may offer new

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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 acccording to what's asked is another. There are a few things I would like to highlight.

1. A 5 marks part requires at least 2 and at max 3 sides 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. :)

opportunities for natural resource extraction, shipping, and tourism.

→ **Demerits of global warming:-**

(1) **Rising sea levels:-** Melting of glaciers and ice sheets can lead to sea level rise, flooding, and coastal erosion.

(2) **Extreme weather events:-** Global warming can lead to increased frequency and severity of heatwaves, droughts, and heavy rainfall.

(3) **Loss of Biodiversity:-** Rising temperature can lead to extinction of many plant and animal species.

(4) **Disruption of food Production:-** Changes in temperature and Precipitation Patterns can lead to crop failures and reduced agricultural Productivity.

(5) **Negative impacts on human health:-** Warmer temperatures can increase the spread of diseases and heat stress.

Q.No.3 (b) What is Doping? Discuss different types of ceramics.

→ **Doping:-**

Doping refers to the intentional introduction of a small

amount of a substance into a material to alter its physical, chemical, or electrical Properties. This is often done to enhance the material's Performance or functionality.

Doping is commonly used in:

=). **Semiconductors**: To create regions with different electrical Properties, allowing the creation of electronic devices like transistors and Solar cells.

=). **Material Science**:- To improve strength, conductivity, or optical Properties of materials.

=). **Nanotecnology**:- To create nanoparticles with specific Properties.

=). **Pharmacology**:- To create drugs with specific Properties.

=). **Types of Ceramics**

Ceramics are classified into Several types based on their composition, Properties, and application. Some important types are:

1. **Oxide Ceramics**:- Made from metal oxides, such as alumina

and Zirconia, these ceramics are hard, wear-resistant, and chemically inert.

2. Carbide Ceramics:- Composed of metal carbides, like Silicon Carbide and tungsten Carbide these ceramics are extremely hard and wear-resistant.

3. Silicate Ceramics:- Based on silicon dioxide, these ceramics include clay, Porcelain, and glass, and are commonly used in tableware, decorative items, and building materials.

4. Advanced Ceramics:- Also known as technical ceramics, these include specialized materials like ceramic matrix composites, nano-ceramics, and bioceramics used in high-performance applications.

5. Glass-Ceramics:- A combination of glass and ceramic Properties, these materials are made by Controlled crystallization of glass, and are used in Cookware, aerospace, and medical applications.

=> Q. No.3 (a) why atoms form chemical bonds? Discuss covalent bond in a water molecule.

Atoms form chemical bonds to achieve a more stable electronic configuration which means a lower energy state. Here are reasons:

1. **Octet Rule**: Atoms tend to gain, lose, or share electrons to achieve a full outer energy level of eight electrons, similar to the noble gases,

2. **Electron Deficiency**: Atoms with fewer than eight electrons in their outer level seek adifional electrons to fill the gap.

3. **Electron Reduction**:- Bonding reduces the overall energy of the system, making it more stable.
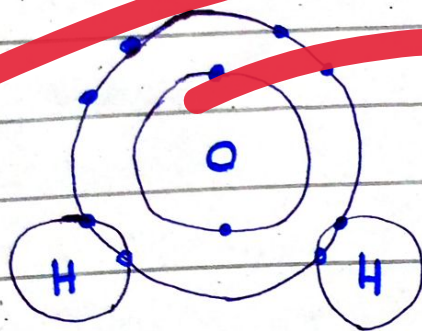
4. **Increased Stability**:- Chemical bonds hold atoms togather, creating a more stable molecule than individual atoms.

=> **Discuss covalent bond in a water molecule:-**

A water molecule is a perfect example of a covalent bond. In H_2O two hydrogen atoms

share electrons with a single oxygen atom to form a covalent bond,

- Oxygen has six valence electrons.
- Hydrogen has one valence electron.
- Oxygen shares two of its electrons with each hydrogen atom forming two single covalent bonds.
- Each hydrogen atom shares its one electron with oxygen, completing the covalent bond.

H_2O

Q. No:3. (d) what is polio? what are the challenges in eradication of polio in Pakistan?

→ what is Polio?

Poliomyelitis is a highly infectious viral disease, which mainly affects young children. Polio cases have decreased by over 99%

1988, from an estimated 350,000 cases then, to 74 reported cases in 2015.

- There are just 2 countries which have never stopped transmission of Polio. The 2 countries are Afghanistan and Pakistan.

- Polio can spread from these 'endemic' countries to infect children in other countries with less-than-adequate vaccination.

- It mostly afects children under the age of 5.

- Polio cause mild symptoms like fever, headache, and sore throat.

- Paralysis.

- Deformity of the arms and legs.

There is no cure for polio, but vaccination can prevent it.

→ **What are the challenges in eradication of Polio in Pakistan?**

The eradication of polio in Pakistan faces several challenges, including:

(1). Insecurity and conflict :-

violence and instability in some regions make it difficult for health workers to access areas and vaccinate children.

(2). Lack of access:-

Remote and hard-to reach areas, especially in Khyber Pakhtunkhwa and Balochistan, make it difficult to reach all children

(3). **Vaccine hesitancy:-**

Some parents refuse vaccination due to misconceptions or mistrust.

(4). **Weak health system:-**

Inadequate healthcare infrastructure and resources impede effective vaccination efforts.

(5). **Political and religious opposition:-**

Some religious leaders and politicians have opposed vaccination efforts, spreading misinformation and hindering progress.

Q. No. 2 (a). 'Artificial Intelligence is the new electricity." Justify with your opinion.

Artificial intelligence is the new electricity means that AI has the potential to transform and revolutionize various aspects of our lives, just like electricity did in the past.

1. Transformation:-

Electricity transformed the way we live and work, enabling the widespread use of machines and appliances. Similarly, AI is transforming industries, automating processes,

and enhancing decision-making.

2. Enabling innovations:-

Electricity enabled the development of new technologies and innovations, such as lighting, refrigerations, ██████ ██, ████, ████████ and computing. AI is similarly enabling new technologies like robotics, natural language Processing, and computer vision.

3. Impact on economy and society:-

Electicity had a significant impact on the economy and society, enabling mass production, urbanization, and changes in workforce dynamics.

4. Continuous improvement:

Electicity has continuously improved over the years, with advancements in transmission, distribution, and generation

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Q. No. 2. (b) CPU is brain of Computer, how it resembles with human brain in working?

The CPU is often referred to as the "brain" of a Computer

because it performs similar functions to the human brain.

⇒. **Control unit:-** The CPU has a control unit that directs data flow, similar to the brain's control over bodily functions.

⇒. **Memory Access:-** The CPU accesses memory (RAM) like the brain retrieves memories from neural networks.

⇒. **Input / output:-** Both CPU and brain receive input and produce output.

⇒. **Processing Information:-** Both CPU and brain process information whether it's instructions, data, or sensory inputs.

⇒. **Processing Style:-** The brain processes information in parallel, using multiple regions, whereas the CPU processess serially.

⇒. **Learning:-** The brain learns and adapts through neuroplasticity, whereas the CPU relies on Programming and algorithms.

Q.NO:3 (c) what do you mean by a balanced diet? Deficiency of vitamins A, B and C can result into what type of imbalance in human body?

A balanced diet refers to a diet that Provides the body with necessary nutrients, vitamins, and minerals in appropriate Proportion to maintain optimal health. A balanced diet typically includes a variety of foods from all food groups, such as fruits, vegetables, whole grains, lean Proteins, and healthy fats.

Components of balanced Diet.

Components	Function.
Carbohydrates	Essential to growth and repair of muscles.
Proteins	One source of energy important in relation to fat soluble vitamins
Vitamins	Water and Fat Soluble Vitamins play important roles in many chemical Processes in the body.
Minerals	Inorganic elements occuring in the body.

These are critical to body's normal functioning.

water. } Essential to normal body functioning. 65% -75% of the human body is water

Dietary fibre. } the fibrous indigestible portion of our diet essential to health of the digestive system.

=> Deficiency of vitamins A, B and C can result into what type of imbalance in human body?

=> Vitamin A deficiency:-
- Impaired vision, night blindness.
- Dry skin, acne.
- Impaired immune function
- Increased risk of infections.

=> Vitamin B deficiency:-
- Fatigue, weakness.
- Nervous system disorders.
- Skin problems
- Hair loss.
- Impaired heart function

=> Vitamin C deficiency:-
- Scurvy.
- Impaired immune function.

Q.NO:3 (d) Discuss working of optical fibers. What is GPS? How 2D and 3D locations are measured by satellites?

Optical fibers are thin glass or plastic fibers that transmit data as light signals. They work on the principle of total internal reflection, where light bouncess off the fiber's inner surface, allowing data to travel long distances without significant loss.

→ 1. Data is converted into light signals using a laser or LED.

→ 2. The light signals enters the optical fiber.

→ 3. The light bounces off the fiber's inner surface, staying within the fiber.

→ 4. The signal travels through the fiber, potentially over long distances

→ 5. The light signal is detected at the receiving end, converting it back into digital data.

⇒ <u>GPS</u>

GPS is a network of the

Satellites orbiting the earth, Providing location information to GPS receivers on the ground. It's used for navigation, tracking, and mapping.

⟹ **2D and 3D locations are measured by Satellites ? How?**
Satellites in the GPS constellation orbit at an altitude of approximately 20,000 km.

⟹ **2D location** is calculated using at least three satellite signals latitude and longitude.

⟹ **3D location** is calculated using at least four satellite signals.

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QNO. 8. (C) What will be the surface area and volume of a sphere if tit. has radius of 7m?

Surface area of Sphere = ?
$$S = 4\pi r^2$$
$$= 4 \times \frac{22}{7} \times 49$$
$$\boxed{S = 616 \, cm^2}$$

The volume of Sphere = ?
$$V = \frac{4}{3} \pi r^3$$
$$V = \frac{4}{3} \times 3.14 \times 343$$

$$V = 1.33 \times 3.14 \times 343$$

$$\boxed{V = 1436.8}$$

Q.8: d: Distribute Rs. 4320 among Zain, Aslam and Ashraf in such a way that if Zain gets 2 parts then Aslam gets three parts, whereas Ashraf gets seven parts.

Let's divide the amount into 12

Parts $= 2 + 3 + 7 = 12$

$$1 \text{ part} = \frac{4320}{12} = 360$$

Zain gets 2 parts $= 2 \times 360 = 720$

Aslam gets 3 parts $= 3 \times 360 = 1080$

Asraf gets 7 parts $= 7 \times 360 = 2520$

Q.8.(a): A man travels over the path of a right triangle having base and hypotenuse 4 and 5 kilometers, respectively. After a complete round he continues in the same direction for 6km and then turns at 90 degree and continues for another 8km. How long he has travelled and how far he is from his starting point?

Man travels around a right-angled triangle with base 4km and hypotenuse 5km. This means he covers a total distance of 4km (base) + 3km (height) + 5km (hypotenuse) = 12km.

He covers this distance twice = 12×2

$= 24$km

He then travels an additional 6km in the same direction = 24km $+ 6$km $= 30$km

Using Pythagorean theorem.

$= \sqrt{(6km)^2 + (8km)^2}$

$= \sqrt{36 + 64}$ $= \sqrt{100}$

$= 10$km

So, the man has traveled a total distance of 30km and is 10km away from his starting point.

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Q.No.6(b): A pair of shoes originally cost is 80$. If there is a 15% discount and 10% sale tax applied. What is the final price?

15% of 80$ $= 80 \times 0.15$

$= 12$

Discount Price $= 80 - 12$

$= 68$ $

Calculate the sale tax $= 68 \times 0.10$

$= 6.80$ \$

Final Price $= 68 + 6.80 = \boxed{74.80 \ \$}$