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GSA

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Section-I

Q No.3 (a) What is form of bonding? Discuss Covalent bonding in a water molecule.

Ans: Atoms chemically bond to achieve a more stable electronic configuration. In a water molecule, Covalent bonds form between two hydrogen atoms and one oxygen atom...

Two ... bonding pairs, ... electrons pairs arrange themselves to minimize repulsions, resulting in a distorted tetrahedral arrangement... the molecule's ... shape and uneven charge distribution lead to a large dipole moment, enabling hydrogen ... between water molecule.

(b) What is doping? Discuss different types of ceramics.

Doping: ... adding substances or using ... to artificially enhance physical performances, often in sports or athletic competitions. This can include things like ... or other drugs. ... It's considered a form of cheating and can be harmful to one's health.

Types of Ceramics:

Structural Ceramics: these are used in making of wear parts, bio-ceramics, cutting tools, engine ...

Analytical Ceramics: those are used in capacitors, insulators, ... integrated ... packages

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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 according 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. :)

magnets and superconductors

Coatings Ceramics; these are used in engines components, cutting tools and industrial wear parts

Chemical Environmental Ceramics; these are used in filters, membranes, catalysts, and catalyst supports.

(c) State some the merits and demerits of global warming.

Ans **Merits OF Global (warming;**

1. Increased food production; warmer temperature and longer growing seasons can lead to increased crop yields and improved agricultural productivity.

2. Economic benefits; Global warming could open new shipping routes and natural resources in arctic region, potentially boosting economic growth.

3. Increased access to natural resources; Thawing permafrost and melting glaciers could reveal new mineral and energy resources.

Demerits of global warming;

As global warming, a boiling issue for the planet it has far more demerits than merits.

1. Raising sea levels; Melting glaciers and ice sheets cause sea level to rise, threatening coastal cities and ecosystems.

2. Extreme weather events; Global warming leads to more frequent and intense heatwaves, droughts, and storms.

3. Loss of biodeversity; Raising temperature and changing ecosystems threaten the survival of many plants and animal species. example (Turtles → warmer temperature tends to produce more female hatchlings. this leads to population decline.

4. Increased risk of waterborne disease and contamination
5. Disruption of Food Systems: changes in temperature and precipitation patterns can lead to crop failure, famine, and food insecurity.

other impact of global warming can damage infrastructure, disrupt economics and lead to significant financial losses.

(d) **What is polio? What are challenges in eradication of polio in pakistan?**

Ans <u>**Polio:**</u> polio is an infectious viral disease that affects the central nervous system and can causes temporary or permanent paralysis. polio is also known as poliomyelitis. the polio virus usually enters environment in the faces of someone who is infected. In areas with poor sanitation, the virus once entered an individual, it infects nerve cells in the spinal cord and brain stem that control muscle movement.

<u>**Challenges in eradication of Polio in Pakistan**</u>

Despite significant progress in reducing polio cases, Pakistan continues to face numerous challenges in its efforts to eradicate the disease including difficulty reaching all areas, especially in remote or conflict zones. Some people refusing vaccines due to misinformation or mistrust. Limited resources and funding, difficulty tracking and monitoring the spread of the disease. Fake reporting of vaccination, making it hard to know who has really been vaccinated. These challenges make it hard to completely eliminate polio in pakistan.

Q No 4 **Write a note on liver juice "Bile".**

Ans. Bile, also known as liver juice, is a vital digestive fluid produced by the liver and stored in the gallbladder. It plays a crucial role in the digestion and absorption of fats and fats-soluble vitamins. The liver produces approximately one letter of bile daily, which is then stored in the gallbladder and released into the small intestine through the bile duct.

The Main Functions of bile include:

Emulsification of fats: Breaking down fats into smaller particles, making them easier to digest.

Activation of enzymes: Activating lipase, an enzyme that further breaks down fats.

Absorption of fat-soluble vitamins: Aiding in the absorption of vitamin A, D, E, and K.

Elimination of bilirubin: Helping to remove bilirubin a waste product from the body.

Antimicrobial properties: preventing infection in the small intestine.

Overall, bile is essential for proper nutrient absorption, digestive health, and overall well-being. Any imbalance or disorders in bile production or function can lead to various health issues, such as indigestion, bloating, and malabsorption.

(b) **Describe role of Kidney in exertion.**

The Kidneys play a vital role in maintaining the body's homeostasis during exertion, and the functions include filtering waste, regulating electrolytes managing fluid balance, producing hormones, maintaining acid-base balance, and supporting blood pressure.

1. Filtering wastes: Removing waste products like Urea, created by muscle metabolism.
2. Regulating electrolytes: Maintaining optimal levels of sodium, potassium, and calcium for proper muscle function.
3. Managing fluid balance: Adjusting fluid levels to maintain blood volume and blood pressure.
4. Producing hormones: Releasing hormones like erythropoietin (stimulates red blood cell production) and renin (helps regulating Blood pressure).
5. Maintaining acid-base balance: Removing excess hydrogen ions generated during intense exercise.
6. Supporting Blood Pressure: Helping to maintain blood pressure through fluid and electrolyte balance.

The Kidney's efficient functioning is crucial for maintaining homeostasis, enabling the body to adapt to physical stress and recover effectively.

(C) Discuss different methods Of Solid Waste Management.

Solid waste management is collecting, treating, and disposing of solid material that is discarded because it has served it's purpose or is no longer useful.
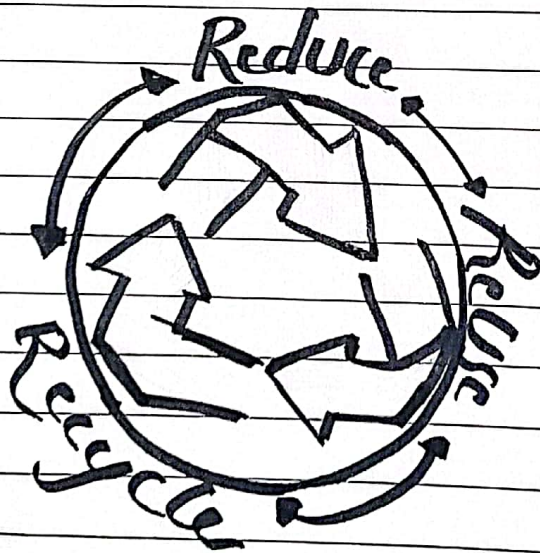
Methods Of Solid Waste Management

1. Sanitary Landfill: This is the most popular solid waste disposal method used today. Garbage is basically spread out thin layers, compressed and covered with soil or plastic foam.

2. Incineration:- Waste is burned to produce energy. In incineration the waste is fed into a furnace, burned, and energy is generated.

Recovery and Recycling:- Recycling or recovery of resources is the process of taking useful but discarded items for next use. The process aims to at reducing energy consumption of new material and reduction of landfills.

Composting:- Due to lack of adequate space for landfills, biodegradable yard waste is allowed to decompose in a medium designed for the purpose, only biodegradable waste materials are used in Composting.

Pyrolysis:- This is method of solid waste management whereby solid wastes are Chemically decomposed by heat without presence of oxygen. This usually occurs under pressure and at temperature upto 430 degree Celsius. The solid wastes are changed into gasses, solid residue and small quantities of Liquid.

(d) Define Terms

(i) Anaemia (ii) Appendictis (iii) Myopia
(iv) Spleen (v) Isotones

(i) **Anaemia :-** A medical condition characterized by a decrease in red blood cells or hemoglobin, leading to fatigue, weakness, pale skin and shortness of breath.

(ii) **Appendictis:** A medical condition characterized by inflammation of the appendix, a small, finger-like pouch attached to the large intestine. This inflammation can cause severe abdominal pain, nausea, vomiting, and fever, and require prompt medical attention, often involving surgical removal of the appendix.

(iii) **Myopia:-** (Nearsightedness) A refractive error where close objects appear clean but distant objects appear blurry, due to an overly curved cornea or lens.

(iv) **Spleen:-** An organ in the upper left abdomen that filters blood, stores red blood cells and platelets and plays a vital role in immune system.

(v) **Isotones :-** Atoms of different elements with the same number of number of neutrons in their atomic nuclei, also known as isotopes of different elements.

Explain each term properly ..
through diagrams

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