

Question No. 02

- a. Global warming, which is a global threat, is hitting the developing and least developed world the most. What measure should be taken to counter it in COP-29?

Answer: - Global warming is a global threat:

Global warming is an international environmental problem. It is instigated by the human activities and perceived as a global threat. Global warming is hitting the both developed and developing countries. The Intergovernmental Panel on climate change (IPCC) defines global warming as the increase in average temperature of the Earth's surface air and oceans since the 19th century. This definition encapsulates both the historical trend of rising temperatures observed over the past century and the ongoing trend expected to continue into the future due to human-induced greenhouse gas emissions.

- Addressing Global warming at COP-29:

Addressing global warming at COP-29 should involve a combination of mitigation, adaptation, and support measures tailored to the specific needs of developing and least developed countries.

1- Financial Assistance

2- Technology Transfer

3- Capacity Building

4- climate Resilience

5- promote sustainable Development

6- Partnerships and Collaborations

7- Empowerment and inclusivity

8- Education and Awareness

Fig. 01: Measures taken in COP-29 to counter Global Warming.

1- Financial Assistance: Developed countries should fulfill their commitment to provide financial support to developing nations for global warming mitigation and adaptation.

2- Technology Transfer: Developed countries should transfer the clean and sustainable technologies to developing countries at affordable rates to combat global warming.

3- Capacity Building: Developed countries should

provide technical assistance and capacity building support to help developing countries in implementing global warming mitigation and adaptation measures effectively.

4. **Promote Sustainable Development:** Both developed and developing countries should prioritize and encourage sustainable development pathways to reduce poverty, social inequality, and environmental problems (global warming).

5. **Climate Resilience:** Developed countries ^{should} support developing countries in building resilience to the impacts of climate change, such as sea-level rise, extreme weather events, and droughts.

6. **Partnerships and Collaboration:** Both developed and developing countries should foster partnerships between governments, civil society organizations, the private sector, and international institutions to mobilize resources and expertise for climate action. Moreover, collaboration at the global, regional and local levels is essential for achieving meaningful progress.

7. **Empowerment and Inclusivity:** Ensure that the voices and priorities of vulnerable communities, including indigenous peoples, women, and marginalized groups, are central to climate decision-making processes.

B. Education and Awareness: Promote climate literacy and awareness-raising campaigns to engage citizens, businesses, and policymakers in climate action.

By adopting a holistic approach that addresses the unique challenges faced by developing and least developed countries, COP-29 can contribute to global efforts to combat climate change and global warming and create a more sustainable and resilient future for all.

b. Describe the functions of arteries, veins and capillaries.

Answer: 1) Arteries: Definition - "Arteries are blood vessels that carry oxygenated blood away from the heart to various parts of the body."

- Function of Arteries:

- i - Transport oxygenated blood: Arteries transport oxygen-rich blood from the heart to tissues and organs throughout the body.
- ii - Maintain Blood Pressure: Arteries have thick, elastic walls that help maintain blood pressure by expanding and contracting in response to the pumping action of heart.

ii - Distribute Nutrients: In addition to oxygen, arteries also transport nutrients and hormones to cells and tissues for metabolism and cellular function.

2- Veins: Definition: "Veins are blood vessels that carry deoxygenated blood from the tissues back to the heart."

- Function of Veins:

i - Return Deoxygenated Blood: Veins collect deoxygenated blood from the body's tissues and return it to the heart, where it is pumped to the lungs for oxygenation.

ii - Contain Valves: Veins have one-way valves that prevent the backward flow of blood and help facilitate the return of blood to the heart, especially against gravity in the lower extremities.

iii - Reservoir of Blood: Veins serve as a reservoir of blood that can be mobilized to maintain blood pressure and cardiac output during changes in posture or activity.

3. Capillaries: Definition: "Capillaries are tiny, thin-walled blood vessels that connect arteries and veins and facilitate the exchange of gases, nutrients, and waste products between blood and tissues."

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- Function of capillaries:

1- Gas and Nutrient Exchange: Capillaries allow for the exchange of oxygen, carbon dioxide, nutrients, and waste products between the blood and surrounding tissues through their thin walls.

- Microcirculation: Capillaries form an extensive network throughout the body, ensuring that every cell is close to a capillary for efficient exchange.

- Regulate Blood Flow: Capillaries play a role in regulating blood flow to tissues and organs by dilating or constricting in response to local metabolic demands and hormonal signals.

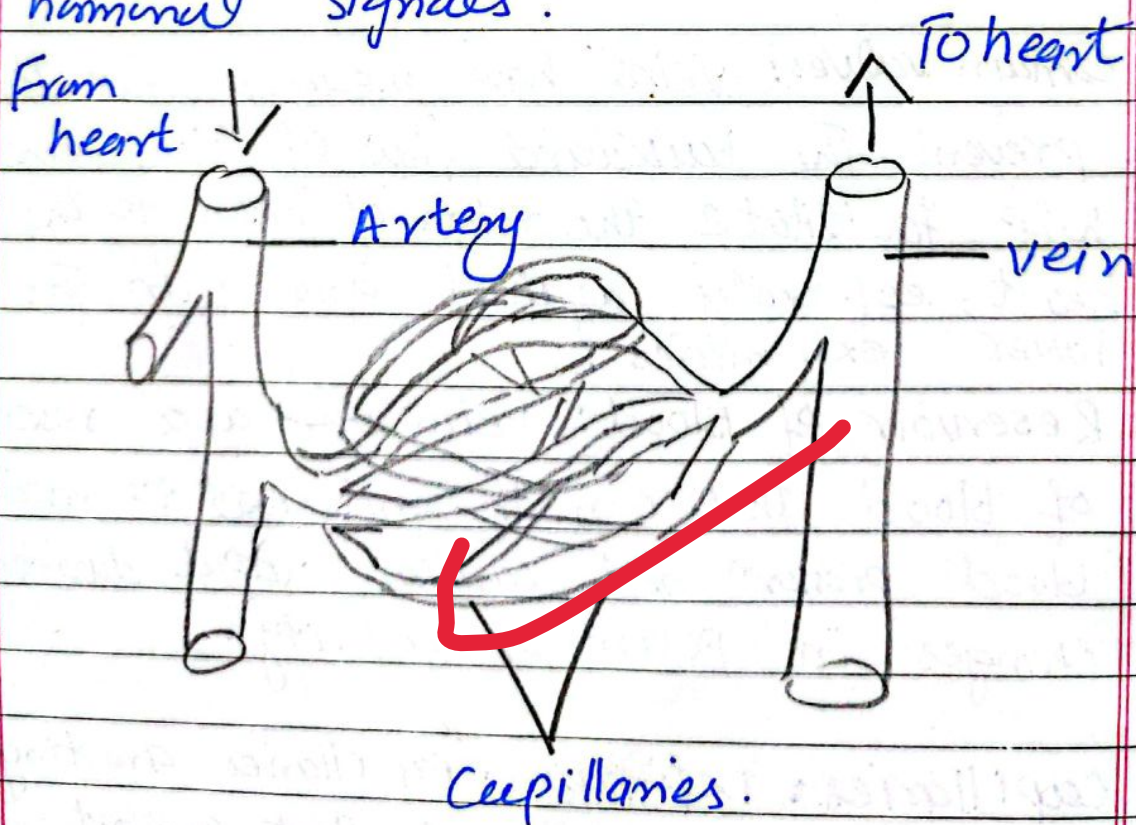


Figure 2: Structure diagram of vein, artery and capillaries.

Together, arteries, veins, and capillaries form the circulatory system, which is responsible for delivering oxygen and nutrients to cells, removing waste products and maintaining homeostasis throughout the body.

C. Why do atoms form chemical bonds?
Explain structure of water.

Answer: - Chemical bond:

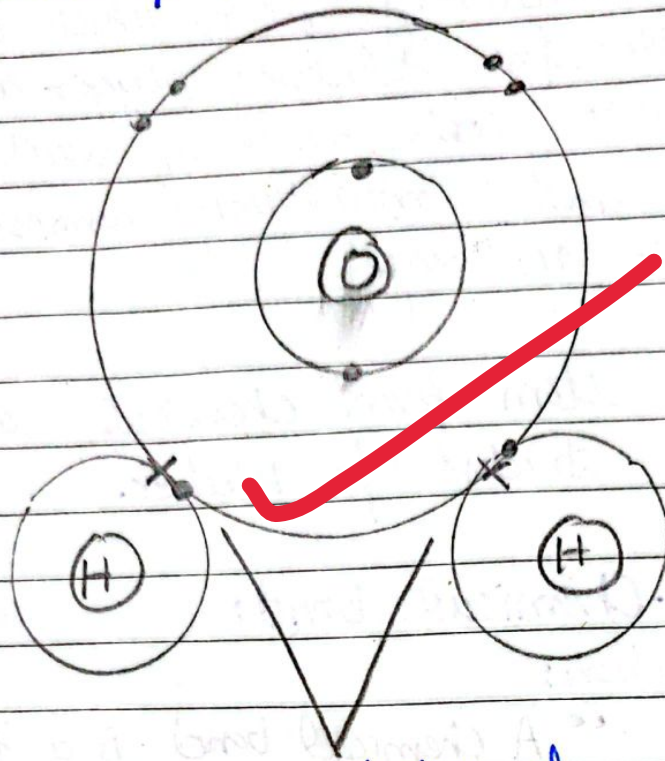
Definition:

"A chemical bond is a force of attraction that holds atoms together in a molecule or compound. It arises from the interaction between the electrons of participating atoms."

- Reason behind Chemical Bonding:

Atoms form chemical bonds to achieve a more stable configuration by filling their outermost electron shells. This stability is achieved through the sharing, donation or acceptance of electrons between atoms, resulting in the formation of molecules. Chemical bonds can be classified into three main types: a) Covalent bond b) Ionic Bond c) Hydrogen Bond.

- Structure of Water Molecule (H_2O):



Oxygen (Z) = 8
 Hydrogen (Z) = 1
 Hydrogen (Z) = 1

Covalent bond

OR

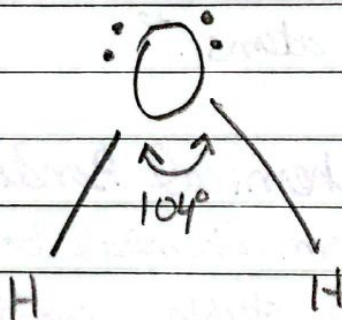


Figure 3: structure of water (H_2O).

Explanation: The structure of water (H_2O) is a bent or V-shaped. It consists of one oxygen atom (O) at the center and two hydrogen atoms (H) attached to the oxygen atom. The two hydrogen atoms are bonded to the oxygen atom, resulting in a molecule with a bent or angular shape.

d) What are conductors, semi-conductors, metals, plastics and ceramics? Give an example of each.

Answer:

i) Conductors:

Definition: "Conductors are materials that allow the flow of electric current with little resistance."

Example: Copper (Cu) is a commonly used conductor in electrical wiring due to its high conductivity and relatively low cost.

ii- Semi-conductors:

Definition: "Semi-conductors are materials that have electrical conductivity intermediate between that of conductors and insulators."

Example: Silicon (Si) is the most widely used semiconductor in electronic devices such as transistors, and solar cells.

iii- Metals:

Definition: "Metals are a class of materials characterized by their lustrous appearance, high thermal and electrical conductivity and malleability."

Example: Iron (Fe) is a widely used metal in construction and engineering applications due to its strength, versatility and abundance.

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4- Plastics:

Definition: "plastics are synthetic polymers composed of long chains of repeating molecular units called monomers."

Example: Polyethylene (PE) is one of the most common types of plastics used in packaging.

5- Ceramics:

Definition: "ceramics are inorganic, non-metallic materials that are typically composed of metallic and non-metallic elements bonded together by ionic or covalent bonds."

Example: Porcelain is a type of ceramic made from clay and other raw materials that is fired at high temperatures. It is widely used in production of tiles and insulators.