

(Mock Test)

Q:2

9. Addressing global warming requires a multifaceted approach, especially in the context of COP-29 where global leaders convene to discuss climate change mitigation strategies. Here are some measures that could be considered.

1. Emission Reduction Targets :
Set ambitious targets for reducing greenhouse gas emissions, with developed countries taking the lead in reducing emissions and providing support to developing and least developed countries to transition to low-carbon economies.

2. Financial Support :
Allocate funds to assist developing and least developed countries in adopting the impacts of climate change and transitioning to renewable infrastructure, technology transfer, capacity building -

and climate resilience programs.

3.

Technology Transfer:

Facilitate the transfer of clean and sustainable technologies from developed countries to developing and least developed countries to accelerate their transition away from fossil fuels.

4.

Capacity Building:

Provide support for capacity building initiatives in developing and least developed countries to enhance their ability to mitigate and adapt to climate change. This could involve training programs, knowledge sharing, and building institutional capacity.

5.

Nature-Based Solutions:

Promote nature-based solutions such as reforestation, afforestation and sustainable land management practices to enhance carbon sequestration and biodiversity conservation.

6. Climate Finance Mechanisms :

Strengthen existing climate finance mechanisms such as Green Climate Fund and explore innovative financing mechanisms to mobilize additional resources for climate action in developing and least developed countries.

7. Adaptation Strategies :

Develop and implement adaptation strategies tailored to the specific needs and vulnerabilities of developing and least developed countries, including measures to enhance food security, water management, and disaster resilience.

8. Climate Justice :

Ensure that climate action is guided by principles of equity and justice, taking into account the historical responsibility of developed countries for causing climate change and disproportionate impacts, particularly in developing and least developed countries, to foster greater understanding and support for climate action at all levels of society.

10. Partnership and Collaboration:

Foster partnerships and collaboration between governments, civil society organizations, the private sector, and other stakeholders to mobilize collective action and resources for addressing climate change on a global scale.

By implementing these measures and fostering international cooperation, COP-29 can make significant progress towards mitigating the impacts of global warming, particularly in the most vulnerable regions of the world.

Q2

b.

Arteries, veins, and capillaries are all vital components of the circulatory system, responsible for transporting blood throughout the body. Here's a brief overview of their functions.

1. Arteries ;

Arteries carry oxygenated blood away from the heart to various parts of the body. They have thick, muscular walls that allow them to withstand the high pressure generated by the pumping action of the heart. Arteries branch into smaller vessels known as arterioles, which further distribute blood to tissues and organs.

2. Veins ;

Veins transport deoxygenated blood back to the heart from the body's tissues and organs. Unlike arteries, veins have thinner walls and less muscular tissue. They also have one-way valves that help prevent the backflow of blood.

Veins gradually merge into larger vessels called venules, which ultimately return blood to the heart.

3. Capillaries :

Capillaries are tiny, thin-walled blood vessels that connect arterioles to venules.

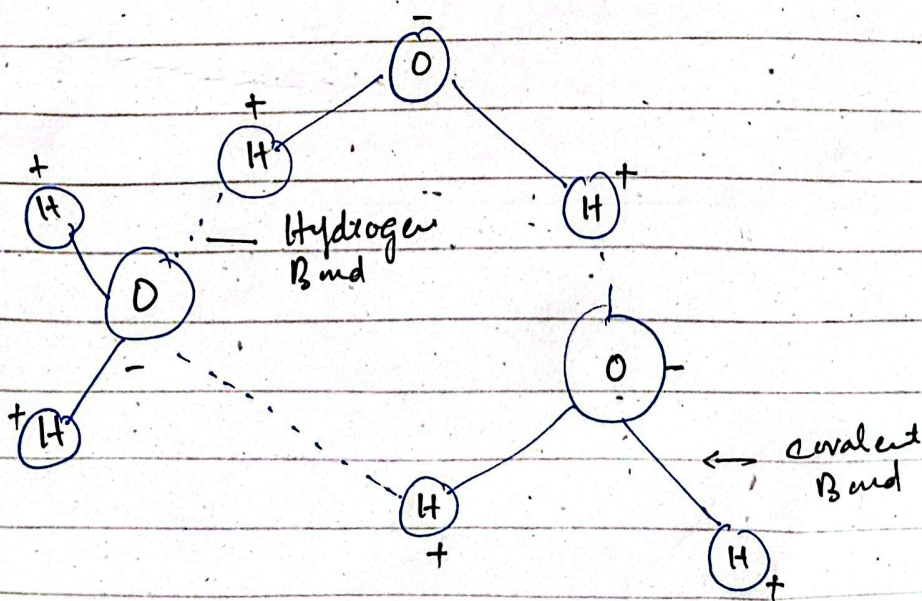
They form an extensive network throughout the body's tissues and organs, allowing for the exchange of nutrients, oxygen, and waste products between the blood and surrounding cells. Capillaries are the site of essential processes such as gas exchange, nutrient delivery, and waste removal.

In summary, arteries carry oxygenated blood away from the heart, and capillaries facilitate the exchange of substances between the blood and body tissues. Together, these three types of blood vessels ensure the proper functioning of the circulatory system, supporting the body's metabolic needs and maintaining overall health.

Q2.
c.

Atoms form chemical bonds to achieve a more stable electron configuration, usually by filling their outer electron shells. This stability arises from the tendency of atoms to attain a full outer shell, either by gaining, losing or sharing electrons with other atoms.

Water is a simple molecule consisting of 2-hydrogen atoms covalently bonded to one oxygen atom. The structure of water is characterized by a bent shape due to arrangement of its atoms and lone pair of electrons.



The oxygen atom is more electronegative than hydrogen, resulting in a polar covalent bond with oxygen carrying a partial negative charge (δ^-) and hydrogen carrying a partial positive charge (δ^+).

This polarity gives water its unique properties, including cohesion, adhesion, surface tension, and high heat capacity, which are essential for life processes and various environmental phenomena.

Q2

d.

Conductors :

These are materials that allow the easy flow of electric current due to the presence of free electrons.
Example : copper (Cu).

Semiconductors :

These materials have conductivity between that of conductors and insulators and can be controlled by impurities or applying voltage.
Example : Silicon (Si).

Metals :

Metals are elements characterized by their high conductivity, malleability, and ductility.
Example : Iron (Fe).

Plastics :

Plastics are synthetic polymers

that can be molded into various shapes and have a wide range of applications due to their low cost, durability and versatility.

Ex: Polyethylene (PE).

Ceramics :

Ceramics are inorganic, non-metallic materials that are typically brittle and have high melting points. &

They are commonly used in applications requiring heat resistance and electrical insulation.

Example: Porcelain)

Q4

9.

Available sources of renewable energy sources in Pakistan include :

Solar Energy : Pakistan receives ample sunlight throughout the year, making solar energy a viable option for electricity generation.

Wind Energy : Coastal areas and regions with high wind speeds offer significant potential for harnessing wind energy.

Hydroelectric power : Pakistan has several rivers and water resources suitable for hydroelectric power generation.

Biomass Energy : Agricultural residues, organic waste, and livestock manure can be used to generate biomass energy.

Policy options to utilize these renewable energy sources and overcome the present energy crises in Pakistan —

include ;

1. Investment Incentives ; Provide financial incentives and tax breaks to attract investment in renewable energy projects , including subsidies for solar panels , wind turbines , and biomass facilities .
2. Regulatory Framework ; Establish clear regulatory frameworks and streamline approval processes for renewable energy projects to encourage private sector involvement and facilitate project development .
3. Grid Integration ; Upgrade and expand the national grid infrastructure to accommodate the integration of renewable energy sources , ensuring efficient transmission and distribution of electricity generated from solar , wind , and hydro sources .
4. Capacity Building ; Invest in training programs and capacity building initiatives to develop a skilled workforce capable

of designing, installing, and maintaining renewable energy systems.

6. **Public Awareness**: Launch public awareness campaigns to promote the benefits of renewable energy and encourage energy conservation practices among the general population.
6. **Technology Transfer**: Facilitate technology transfer agreements and partnerships with international organizations and renewable energy companies to access advanced technologies and expertise for the development of renewable energy projects.
7. **Off-Grid Solutions**: Implement off-grid renewable energy solutions, such as solar-powered microgrids and decentralized energy systems, to provide electricity to remote and underserved areas where grid connectivity is limited or unreliable.

Q4

b.

The Sun is a massive, spherical star composed primarily of hydrogen and helium gases. Its structure consists of several layers.

- 1- Core: The innermost region where nuclear fusion occurs, converting hydrogen into helium and releasing enormous amounts of energy in the form of heat and light.
- 2- Radiative Zone: Surrounding the core, this zone is where energy generated in the core gradually moves outward through radiation.
- 3- Convective Zone: Above the radiative zone, this region is characterized by convective currents, where hot plasma rises from the radiative zone, cools at the surface, and sinks back down.
- 4- Photosphere: The visible surface of the sun, where energy is radiated.

into space as sunlight.

5. Chromosphere: A thin layer above the photosphere, where temperature increases with altitude.

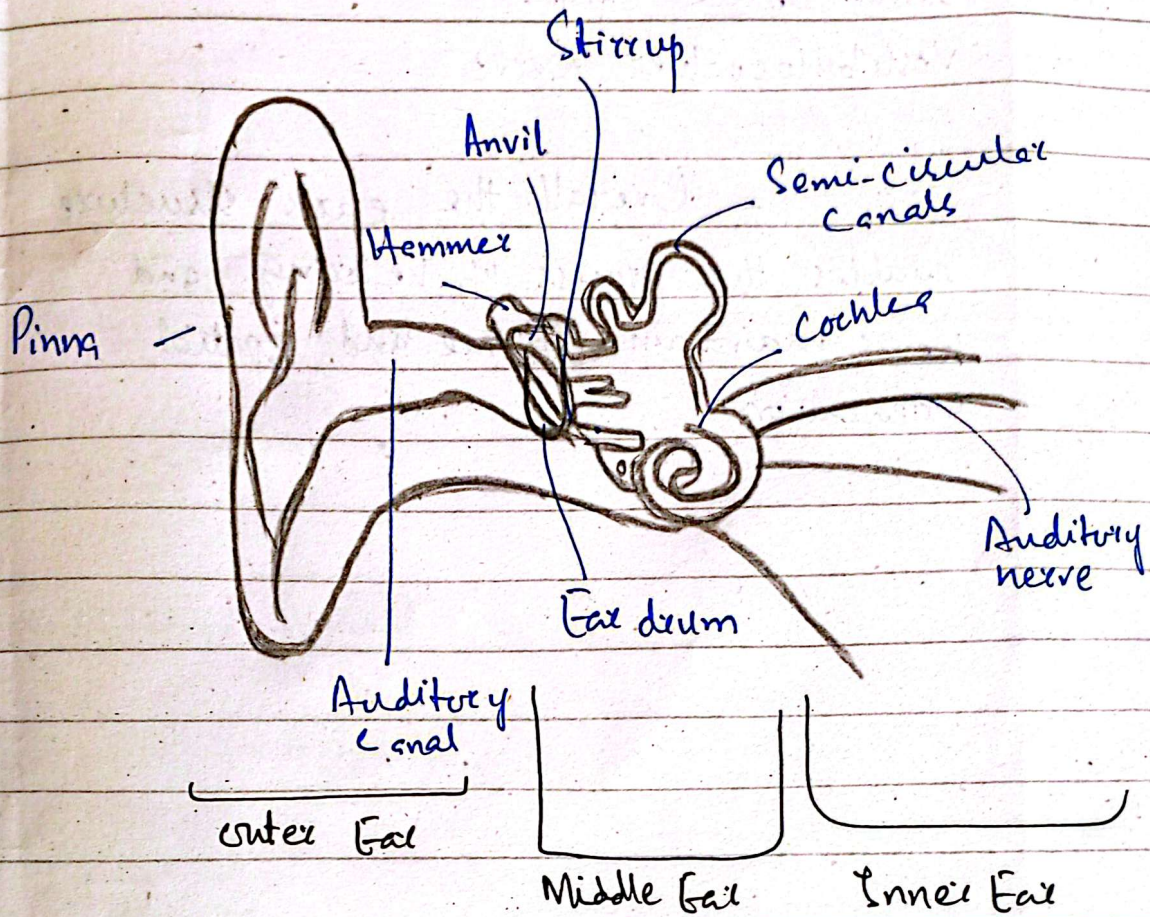
6. Corona: The outermost layer of the Sun's atmosphere, extending millions of kilometers into space.

Q4
c.

Ceramic material is an inorganic, non-metallic material typically composed of compounds of metallic and non-metallic elements.

Yes, Ceramics can be recycled, but the process is limited and less common compared to other materials like metals and plastics.

Q4
d.



The human ear can be divided into 3-main parts: Outer, Middle and Inner ear.

1- Outer Ear;

Pinna (Auricle)

Ear canal (Auditory canal)

2- Middle Ear;

Ear drum (Tympanic Membrane)

Ossicles. Three small bones (malleus, incus & stapes.)

3- Inner Ear -

Cochlea

- Semi-circular canals
- Vestibulocochlear Nerve

- Overall the ear's structure enables the process of hearing and helps maintain balance and spatial orientation.

26
9.

$$\text{Total increase in population} = \frac{\text{Final population} - \text{Initial population}}$$

$$22,500 - 18,000 = 4,500$$

Average annual increase =

$$\frac{\text{Total increase in pop.}}{\text{No. of years}} = \frac{4,500}{10} = 450$$

Percentage increase per year =

$$\frac{\text{Average annual increase}}{\text{Initial population}} \times 100$$

$$\left(\frac{450}{18,000} \right) \times 100$$

$$= \sim 2.5\%$$

So, the population of the village increased by approx. 2.5% per year over the decade.

Q6

b.

Units produced by one machine in one day =

$$\text{Total units produced} / \text{No. of machines} \times \text{No. of days}$$

$$= 600 / (20 \times 9) =$$

$$= \frac{600}{180} = 3.33 \text{ Units}$$

Now, let's find out how many units 18 machines can produce in 12 days.

$$\text{Total Units} = \left(\text{Units produced by one machine in one day} \right) \times \left(\text{No. of Machines} \right) \times \left(\text{No. of days} \right)$$

$$\text{Total Units} = 3.33 \times 18 \times 12$$

$$= \boxed{599.76 \text{ Units}}$$

Q6
c.

$$1 \text{ Kilometer} = 1000 \text{ m.}$$

$$\left. \begin{array}{l} \text{Distance covered by} \\ \text{the train} \end{array} \right\} = 69 \text{ km} \times 1000 \text{ m} \\ = 69,000 \text{ m}$$

$$\leftarrow \text{Time taken by the train} = 45 \text{ - minutes}$$

Now, calculate speed of car:

$$= \frac{\text{Distance covered by car}}{\text{Time taken by car}}$$

$$= \frac{450 \text{ m}}{1 \text{ min}} = 450 \text{ m/min.}$$

Speed of train =

$$\frac{\text{Distance covered by train}}{\text{Time taken by train}}$$

$$\frac{69,000 \text{ m}}{45 \text{ min}} = 1533.33 \text{ m/min.}$$

$$\text{Ratio of speed} = \frac{450 \text{ m/min}}{1533.33 \text{ m/min}} \\ = 0.2936$$

The ratio of speed is ~ 0.2936 .

Q.6

d.

The perimeter P of a regular Pentagon with side length 's' is given by formula.

$$P = 5s$$

Given that each side is 15cm,

$$P = 5 \times 15$$

$$P = 75 \text{ cm}$$

So, the perimeter of the pentagon is 75cm.

Q8

9) BROTHER \longrightarrow QDGSNGA

SISTER \longrightarrow ..?

\therefore Each letter in
BROTHER is
shifted forward
by 2 \rightarrow positions in
the English Alphabet.

R.w

A	B	C	D	E	F	G	H	I
J	K	L	M	N	O	P	Q	R
S	T	U	V	W	X	Y	Z	

Now, applying the same pattern to
SISTER.

UKUVGT

So, the coded word for SISTER is
"UKUVGT".

Q.8

6.

The differences between consecutive terms are increasing by a factor

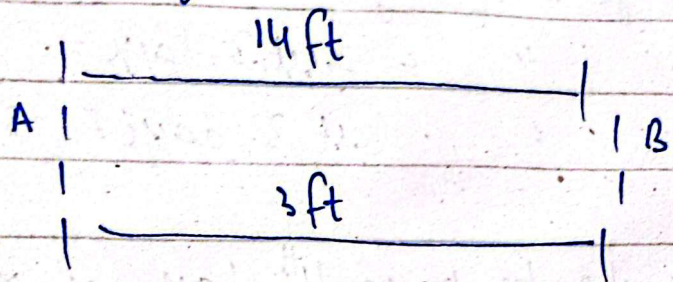
$$\left. \begin{array}{l} 3 - 1 \times 3 = 3 \\ \quad \quad 4 \times 3 = 12 \\ \quad \quad 15 \times 3 = 45 \end{array} \right\}$$

So, to find the next term

$$21 + 45 = 66$$

Therefore the missing no. in sequence
is 66.

9 Naseer walked 10 feet East from point A to B. Then walks 3 ft — right, Finally 14 ft — Right



Now, we have a right-angle triangle.

Using Pythagorean theorem;

$$\text{Hypotenuse}^2 = \text{Base}^2 + \text{Height}^2$$

$$= 10^2 + 3^2$$

$$100 + 9 = \boxed{109}$$

$$\text{Hypotenuse} = \sqrt{109}$$

$$= 10.44 \approx \boxed{10.44}$$

So, Naseer is app. 10.44 feet away from point A.

Q8

d.

The average temp. of entire week is 33°C
= 4 " " " first 3-days = 30°C
= " " " last 3-days = 35°C

Let's denote temp. on 4th day as x
(in $^{\circ}\text{C}$)

Total temp. of entire week } = Average temp. of week \times No. of Days

$$33^{\circ}\text{C} \times 7 \text{ days} = 231^{\circ}\text{C}$$

Total temp. of the entire week = Total temp. of first 3-Days + Temp. on 4th Day + Total Temp. last 3-Days

$$231 = (30 \times 3) + x + (35 \times 3)$$

$$231 = 90 + x + 105$$

$$231 = 195 + x$$

$$x = 231 - 195 = \boxed{36}$$

So, the temperature on 4th day is 36°C ,

26