



INSIGHTS IAS - WEEKLY COMPILATION

PYQ INITIATIVE

“PRACTICE TO PROGRESS”

19 MAR - 23 MAR

PRACTICE CONSISTENTLY & YOU WILL
SEE SUSTAINABLE PROGRESS

PRACTICE TO PROGRESS {P2P}

ANCIENT HISTORY: IVC

Q. Which of the following characterizes/characterizes the people of the Indus Civilization? [UPSC CSE 2013]

1. They possessed great palaces and temples.
2. They worshipped both male and female deities.
3. They employed horse-drawn chariots in warfare.

Select the correct statement/statements using the codes given below

- a. 1 and 2 only
- b. 2 only
- c. 1, 2 and 3
- d. None of the statements given above is correct



SOLUTION

Ans: B

Exp:

HARAPPAN CIVILIZATION:

The Harappan Civilization arose in the **North -western part** of the Indian subcontinent. It is called Harappan because this civilization was **discovered first in 1921** at the modern site of Harappa situated in the province of West Punjab in Pakistan.

The Harappan culture covered parts of Punjab, Sindh, Balochistan, Gujarat, Rajasthan, and the fringes of western Uttar Pradesh.

It is **older than the chalcolithic cultures** which have been treated earlier, but it is far more developed than these cultures.

Division in Society:

Harappan society was an urban society and comprised of at least three distinct social groups: Ruled, rich merchants, and poor laborers who lived in the lower part of the city.

It shows the **division of labor and specialization** in Harappan society. It also shows that Harappans had well organized administrative machinery.

No building has been discovered in the Indus valley which can resemble a temple. Although “**Great Bath**” may have been **used for ritual purposes** by the Indus valley people. S1 is incorrect.

Figurines resembling female deities and male gods have been found in the Indus Valley. S2 is correct.

No trace of Horses has been found in the Indus valley. S3 is incorrect.

Religion:

Harappan believed in Nature Worship– Gods in the form of trees such as Peepal and animals (bull). Idolatry was prevalent, they also worshipped Mother goddess, Pasupati yogi (lord of cattle), and Phallic symbols.

Harappans were called **secular society** as no temple (except for the great bath) or religion have been found (unlike in other contemporary civilizations)

CHARACTERISTICS



- **Encompassed most of modern-day Pakistan**
- **Produced barley and wheat**
- **Used copper, and then bronze, tools**
- **Traded with places as far away as Egypt**
- **Developed a writing system**

PRACTICE TO PROGRESS {P2P}

ENVIRONMENT: PLANT VARIETIES

Q. Consider the following statements: [UPSC CSE 2021]

1. Moringa (drumstick tree) is a leguminous evergreen tree.
2. The Tamarind tree is endemic to South Asia.
3. In India, most of the tamarind is collected as minor forest produce.
4. India exports tamarind and seeds of moringa.
5. Seeds of moringa and tamarind can be used in the production of biofuels.

Which of the statements given above are correct?

- a. 1, 2, 4 and 5
- b. 3, 4 and 5
- c. 1, 3 and 4
- d. 1, 2, 3 and 5



SOLUTION

Ans: B

Exp:

MORINGA AND TAMARIND:

Moringa is a fast growing, **drought-resistant tree** native to the Indian subcontinent. Found in the wild in the **sub-Himalayan regions** of Northern India and now grown worldwide in the tropics and sub-tropics. S1 is incorrect.

Tamarind is a **leguminous tree** bearing edible fruit that is indigenous to tropical Africa. S2 is incorrect.

In India most of the **Tamarind** is collected as **Minor Forest Produce** with **Minimum Support Price**. Tamarind is also actively exported from India. S3 and S4 are correct. **Biodiesel** is derived from the **tamarind seed** through the **transesterification** process as potential alternative feedstock for the diesel engine. Seeds of moringa and tamarind can be used in the production of biofuels.

Both moringa and tamarind seeds have been studied for their potential use in the **production of biofuels**.

Moringa seeds contain high levels of oil, while tamarind seeds contain a polysaccharide that can be **used to produce a biodegradable polymer** that is suitable for use in biofuels. S5 is correct.

Recently, Agricultural and Processed Food Products Export Development Authority (**APEDA**) has been supporting private entities in creating the **necessary infrastructure** to promote **Moringa products exports from India.**

Moringa v tamarind

A comparison of the input cost and income a farmer makes from the two crops



MORINGA



TAMARIND

50-55 tonnes

Yield/hectare

6-10 tonnes

₹2,57,000

Average annual income/hectare

₹2,00,000

₹23,000

Cost of manure/hectare

₹28,000

6-9 months

Gestation period

8-10 years

14,683 hectares

Area covered in India

54,740 hectares

PRACTICE TO PROGRESS {P2P}

GEOGRAPHY: CLIMATOLOGY

Q. Consider the following statements: [UPSC CSE 2022]

1. High clouds primarily reflect solar radiation and cool the surface of the Earth.
2. Low clouds have a high absorption of infrared radiation emanating from the Earth's surface and thus cause a warming effect.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2



SOLUTION

Ans: D

Exp:

CLOUDS AND ITS FORMATION:

Clouds are an important part of the earth's weather and climate. Clouds form when water condenses in the sky.

Clouds are visible accumulations of tiny water droplets or ice crystals in the Earth's atmosphere.

Low, thick clouds primarily reflect solar radiation and cool the surface of the Earth. S1 is incorrect.

High, thin clouds primarily transmit incoming solar radiation. At the same time, they trap some of the outgoing infrared radiation emitted by the Earth and radiate it back downward, thereby warming the surface of the Earth.

Whether a given cloud will heat or cool the surface depends on several factors, including the cloud's altitude, its size, and the make-up of the particles that form the cloud. The components of the Earth system that are important to the radiation budget are the planet's surface, atmosphere, and clouds. S2 is incorrect.

WHY ARE CLOUDS IMPORTANT?

- They are needed for rains or snow.
- During the nights, clouds reflect heat to the earth and keep the temperature warm.
- During the day, clouds help in keeping the temperature cooler by shielding the sunlight.
- Researching and studying clouds helps in understanding weather and climate.

CLASSIFICATION OF CLOUDS BASED ON THEIR SHAPE OR APPEARANCE:

Based on shape, clouds can be classified as follows:

- Cirrus clouds.
- Cumulus clouds.
- Stratus clouds.

WHAT ARE CIRRUS CLOUDS?

- Cirrus Clouds are found at high altitudes, typically 6000 metres or 20,000 feet above the surface of the Earth. They are white, filament-like and thin.
- They appear mostly as delicate white patches or narrow bands.
- Cirrus clouds may also appear fibrous and silky like hair strands. Ice-crystals are always the main composition of Cirrus Clouds.
- Depending on the density of formation of these ice-crystals, the transparency of Cirrus clouds varies. You will commonly find Cirrus clouds appearing bright yellow before sunrise and red after sunset.
- Cirrus clouds are formed due to the freezing of supercooled water droplets forming ice crystals.


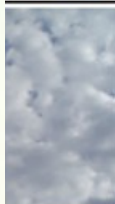


CUMULUS CLOUDS:

- The conventional picture that first comes to your mind when speaking of clouds is Cumulus Clouds.
- Cumulus clouds are the mid-altitude clouds that look like floating pieces of fluffy cotton.
- They are usually bright white.
- They appear at altitudes of only 1000 metres or 3300 feet above the Earth's Surface.

- The top of the Cumulus cloud always has rounded, dome-like edges.
- Cauliflower serves as the best object to understand the shape and appearance of a Cumulus cloud.
- All cumulus clouds are formed due to convection. As the air gets heated at the surface, it rises above and eventually cools down. After this, the moisture or water vapour undergoes condensation and forms the cloud.

STRATUS CLOUDS:

- Stratus Clouds look like a huge grey or dull coloured blanket hanging low in the sky.
- They appear at low altitudes.
- They often resemble fog and are composed of a uniform layer.
- When Stratus Clouds warm up, they indicate rain, and if they cool down, it means snowfall might happen.
- Only when the layer of Stratus cloud breaks open, the blue sky becomes visible.
- Stratus clouds are formed in stable conditions when calm and gentle breezes rise up and cool down on reaching over colder land or ocean surfaces.

	High clouds observed over the middle latitudes typically reside at altitudes near and above 20,000 feet. At such rarefied altitudes, high clouds are composed of ice crystals.
	Middle clouds reside at an average altitude of ~10,000 feet over the middle altitudes. Keep in mind that this is an average altitude, so middle clouds can form a couple of thousand feet above or below the 10,000- foot marker. Middle clouds are composed of water droplets and/or ice crystals.
	Low clouds can form anywhere from the ground to an altitude of approximately 6000 feet. For the record, fog is simply a low cloud in contact with the earth's surface.
	Clouds of vertical development cannot be classified as high, middle or low because they typically occupy more than one

NIMBUS CLOUDS:

- All the clouds that bear rain are usually termed Nimbus Clouds.
- These clouds lack any features and have little characterisation.
- Nimbus clouds appear to cover most areas of the sky.
- They are often associated with moderate and continuous rain or snowfall.
- These clouds are present from the lower to the middle layers of the troposphere, responsible for rainfall.

PRACTICE TO PROGRESS {P2P}

MODERN HISTORY: BATTLES

Q. Consider the following statements:

[CDS 2014 (I)]

1. Battle of Buxar provided the key to the English to establish their rule in India.
2. The Treaty of Allahabad, concluded in 1765, enabled the British to establish their rule in Bengal.

Which of the statement(s) given above is/are correct?

- a. Only 1
- b. Only 2
- c. Both 1 and 2
- d. Neither 1 nor 2



SOLUTION

Ans: C

Exp:

BATTLE OF BUXAR:

It was a **battle fought between** the English Forces, and a joint army of the Nawab of Oudh, Nawab of Bengal, and the Mughal Emperor.

The battle was the result of misuse of trade privileges granted by the Nawab of Bengal and also the colonialist ambitions of East India Company

The Battle of Buxar, which **took place in 1764**, was a decisive battle in the Indian sub-continent.

The victory of the British East India Company in this battle provided them with a key advantage and paved the way for their establishment of control over Bengal and other parts of India. S1 is correct.

The **Treaty of Allahabad** was signed on 16 August 1765 between the Mughal Emperor **Shah Alam II** and **Robert Clive** of the East India Company, in the aftermath of the Battle of Buxar.

It granted the Company the diwani rights, or the **right to collect revenue, in Bengal, Bihar, and Odisha.**

This effectively gave the British control over these regions and marked a significant step in their **establishment of political power** in India. S2 is correct.

RESULT OF BATTLE OF BUXAR:

- Mir Qasim, Shuja-Ud-Daula and Shah Alam-II lost the battle on October 22, 1764.

- **Major Hector Munro** won a decisive battle and Robert Clive had a major role in that.
- English became a great power in northern India.
- **Mir Jafar (Nawab of Bengal)** handed over districts of Midnapore, Burdwan and Chittagong to the English for the maintenance of their army.
- The English were also permitted duty-free trade in Bengal, except for a duty of two per cent on salt.
- After the death of Mir Jafar, his minor son, Najimud-Daula, was appointed nawab, but the real power of administration lay in the hands of the naib-subahdar, who could be appointed or dismissed by the English.
- Clive made political settlements with Emperor **Shah Alam II** and **Shuja-Ud-Daula of Awadh** in the Treaty of Allahabad.



PRACTICE TO PROGRESS {P2P}

GEOGRAPHY: ATMOSPHERE

Which of the following statements concerning atmosphere of the Earth are correct? [CDS 2016]

1. In stratosphere, temperature increases with altitude.
2. In mesosphere, temperature decreases with altitude.
3. The lowest temperature of the atmosphere is recorded in the upper part of mesosphere.
4. Tropopause is an isothermal zone.

Which of the statements given above are correct?

- (a) 1 and 2
- (b) 1,2and3
- (c) 3and4
- (d) All of these



SOLUTION

Ans: D

Exp:

ATMOSPHERE:

- Our planet earth is enveloped by a deep blanket of gases extending several thousands of kilometers above its surface. This gaseous cover of the earth is known as the atmosphere.
- Like land (lithosphere) and water (hydrosphere), the atmosphere is an integral part of the earth.
- Compared to the earth's radius, the atmosphere appears to be only a very thin layer of gases. However, because of the force of gravity, it is inseparable from the earth.
- Atmospheric pressure: The air exerts pressure on earth's surface by virtue of its weight. This pressure is called atmospheric pressure. Atmospheric pressure is the most important climatic element. The atmospheric pressure at sea level is 1034 gm per square centimeter.

In the **Stratosphere**, temperature increases with altitude due to the presence of the ozone layer, which absorbs ultraviolet radiation from the Sun, leading to the heating of the surrounding air. S1 is correct.

The **Mesosphere** is the third layer of the Earth's atmosphere, located above the stratosphere. As altitude increases, the density of air molecules decreases, resulting in a decrease in temperature. S2 is correct-

The **lowest temperature** of the **atmosphere** is recorded in the upper part of the meso-

sphere. Known as the mesopause, this is the coldest region of the Earth's atmosphere with temperatures reaching as low as -90 degrees Celsius (-130 degrees Fahrenheit). S3 is correct.

The **Tropopause** is the **boundary between the troposphere** (the lowest layer of the atmosphere) and the **stratosphere**.

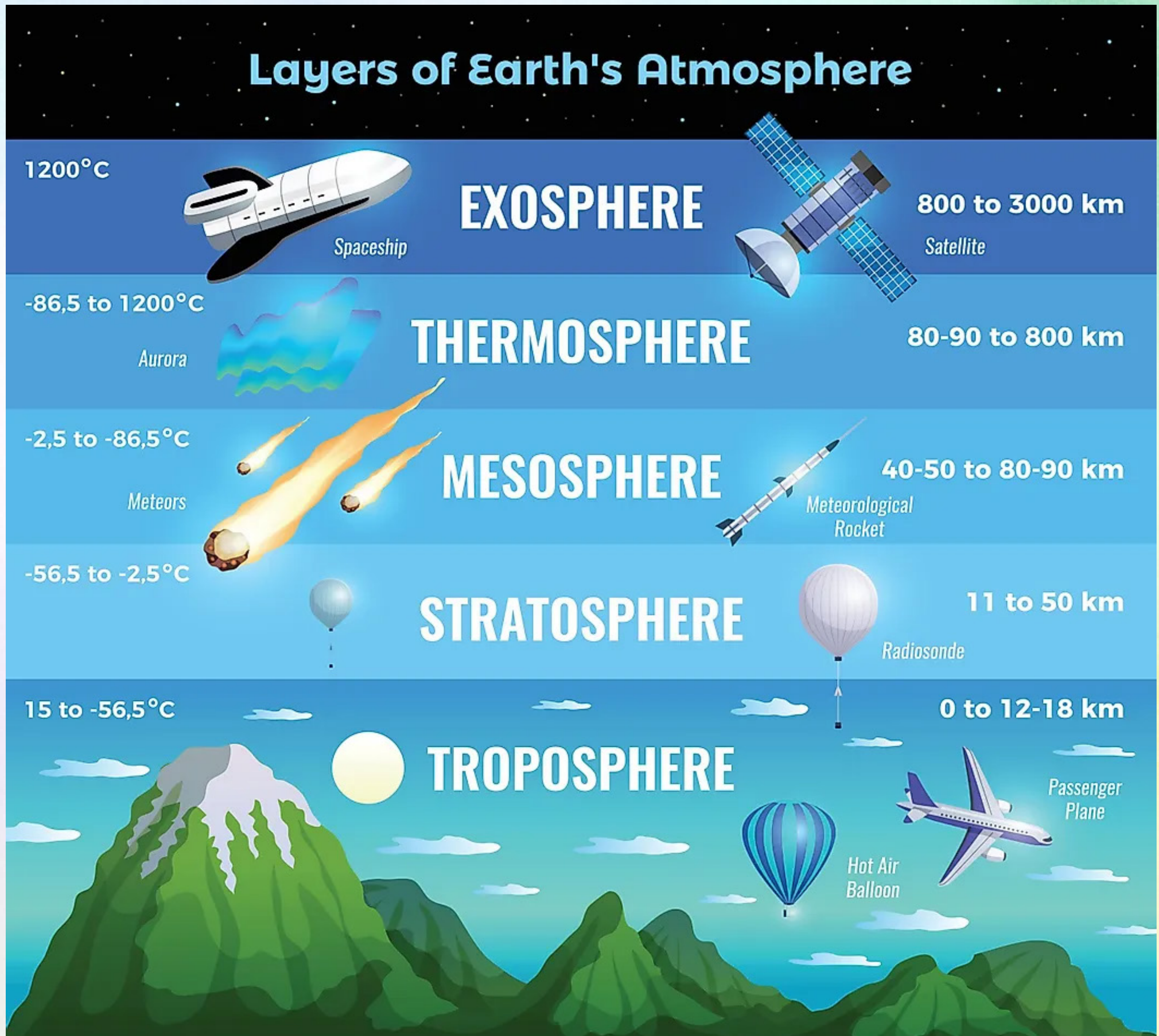
In this region, the temperature remains relatively constant with increasing altitude, resulting in an isothermal zone. S4 is correct.

ROLE OF EARTH'S ATMOSPHERE

- The atmosphere contains various gases like oxygen, carbon dioxide, nitrogen etc.
- **Plants require carbon dioxide to survive** while animals and many other organisms need oxygen for their survival. The atmosphere supplies these life giving gases.
- All life forms need a particular range of temperature and a specific range of frequencies of solar radiation **to carry out their biophysical processes**.
- The atmosphere absorbs certain frequencies and lets through some other frequencies of solar radiation. In other words, the atmosphere regulates the entry of solar radiation.
- **The atmosphere also keeps the temperature over the earth's surface within certain limits**. In the absence of the atmosphere extremes of temperature would exist between day and night over the earth's surface.
- **Harmful ultraviolet radiation** would find its way through, if the atmosphere (ozone in stratosphere to be specific) were absent.
- The atmosphere also takes care of **extra-terrestrial objects** like meteors which get burnt up while passing through the atmosphere (mesosphere to be precise) due to friction.

Weather is another important phenomenon which dictates the direction of a num-

ber of natural and man-made processes like plant growth, agriculture, soil-formation, human settlements, etc. Various climatic factors join together to create weather.



PRACTICE TO PROGRESS {P2P}

SCIENCE & TECHNOLOGY: ROCKET ENGINES

Q. Consider the following statements: [CAPF 2022]

1. Aluminium powder is used as solid fuel for rocket engines.
2. Compared to liquid fuel propelled rocket engines, the thrust per amount of fuel burned is higher in solid fuel propelled rocket engines.

Which of the statements given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2



SOLUTION

Ans: A

Exp:

SOLID FUEL FOR ROCKET ENGINES

Aluminium powder is a common ingredient in conventional solid rocket propellants. It is used to increase specific impulse & stability.

Aluminum-water reactions have been proposed and studied for several decades for underwater propulsion systems and applications requiring hydrogen generation.

Aluminum and water have also been proposed as a **frozen propellant**, and there have been proposals for other refrigerated propellants that could be mixed, frozen in situ, and used as solid propellants.

Aluminium powder is indeed used as a solid fuel for rocket engines. It is commonly used in combination with an oxidizer, such as ammonium perchlorate, to create a solid propellant mixture. S1 is correct.

LIQUID FUEL ROCKET ENGINES:

Rocket propellant is the reaction mass of a rocket. This reaction mass is ejected at the **highest achievable velocity** from a rocket engine to produce thrust.

Compared to liquid fuel propelled rocket engines, solid fuel propelled rocket engines generally have lower specific impulse and lower thrust per amount of fuel burned. Liquid fuel rocket engines typically provide **higher thrust** and **greater control** over the thrust profile. S2 incorrect.

The energy required can either come from the propellants themselves, as with a chem-

ical rocket, or from an external source, as with ion engines.

Rockets create thrust by expelling mass rear-ward, at high velocity. The thrust produced can be calculated by multiplying the mass flow rate of the propellants by their exhaust velocity relative to the rocket (specific impulse).

A rocket can be thought of as being accelerated by the pressure of the combusting gases against the combustion chamber and nozzle, not by “pushing” against the air behind or below it.

