4 Air

Lesson at a Glance

- The **atmosphere** is a thin blanket of air that surrounds the earth. It protects us from the harmful rays of the sun. It consists of mainly nitrogen (78%) and oxygen (21%). Carbon dioxide, helium, ozone, argon and hydrogen are found in lesser quantities.
- Nitrogen is very important for plants. Their survival depends on this gas.
- Oxygen is essential for humans and animals. They breathe in oxygen, produced by green plants during **photosynthesis.**
- Green plants take in carbon dioxide which is released by humans and animals. Thus, there is mutual relation between the plants and the humans or animals. Hence, we should protect plants and trees for our own benefit.
- The atmosphere is divided into five layers starting from the earth's surface. These layers are—**Troposphere**, **Stratosphere**, **Mesosphere**, **Thermosphere** and **Exosphere.**
- Troposphere is the layer in which the air we breathe exists. Almost all weather phenomena occur here.
- Stratosphere contains a layer of ozone gas.
- Mesosphere extends up to the height of 80 km. Meteorites burn up in this layer on entering from the space.
- Thermosphere helps in radio transmission.
- Exosphere is the uppermost layer, where air is very thin.
- Weather is hour-to-hour, day-to-day condition of the atmosphere.
- **Climate** is the average weather condition of a place for a longer period of time.
- The **temperature** of the atmosphere remains changing. The degree of hotness and coldness of the air is known as temperature.
- **Insolation** is an important factor that influences the distribution of temperature. The amount of insolation decreases from the equator towards the poles. Therefore, the temperature decreases in the same way.
- **Air** above us presses us from all directions with a great force on our body and our body exerts a counter pressure.

- Air pressure is the pressure exerted by the weight of air on the earth's surface. As we go up the layers of atmosphere, the pressure falls rapidly.
- **Low pressure** is associated with cloudy skies and wet weather. **High pressure** is associated with clear and sunny skies. The air always moves from high pressure areas to low pressure area.
- **Wind** is the movement of air from high pressure area to low pressure areas. Wind may be gentle. At times it may be strong and devastative.
- Winds are of three types—**Permanent winds**, **Seasonal winds** and **Local winds.**
- **Moisture** means humidity. A humid day is one when the air is fall of water vapour. On a humid day, clothes lake longer to dry and sweat from our body does not evaporate easily.
- **Clouds** are masses of water droplets. When these droplets of water become very heavy they come down as precipitation. Precipitation that comes down to the earth in liquid form is called **rain.**
- There are three types of rain on the basis of mechanism—the **conventional rainfall**, the **orographic rainfall** and the **cyclonic rainfall.**

TEXTBOOK QUESTIONS SOLVED

Q. 1. *Answer the following questions briefly.*

(*i*) *What is atmosphere?*

(*ii*) *Which two gases make the bulk of the atmosphere?*

(*iii*) *Which gas creates greenhouse effect in the atmosphere?*

(*iv*) *What is weather?*

(*v*) *Name three types of rainfall.*

(*vi*) *What is air pressure?*

Ans. (*i*) Atmosphere is a thin blanket of air that surrounds the earth. It protects us from the harmful rays of the sun. It consists of several gases in which nitrogen and oxygen occupy the major portion.

(*ii*) Nirtrogen (78%) and oxygen (21%) make the bulk of the atmosphere.

(*iii*) Carbon dioxide creates greenhouse effect in the atmosphere.

(*iv*) Weather is hour-to-hour, day-to-day condition of the atmosphere.

(*v*) • Convectional rainfall
- Orographic rainfall
- Cyclonic rainfall.

(*vi*) The pressure exerted by the weight of air on the earth's surface is known as air pressure.

Q. 2. *Tick the correct answer:*

(*i*) Which of the following gases protects us from harmful sun rays?

(*a*) Carbon dioxide (*b*) Nitrogen

(*c*) Ozone.

(*ii*) The most important layer of the atmosphere is

(*a*) Troposphere (*b*) Thermosphere

(*c*) Mesosphere.

(*iii*) Which of the following layers of the atmosphere is free from clouds?

(*a*) Trosphere (*b*) Stratosphere

(*c*) Mesosphere.

(*iv*) As we go up the layers of the atmosphere, the pressure

(*a*) Increases (*b*) Decreases

(*c*) Ramains the same.

(*v*) When precipitation comes down to the earth in the liquid form, it is called

(*a*) Cloud (*b*) Rain

(*c*) Snow.

Ans. (*i*) —(*c*), (*ii*)—(*a*), (*iii*)—(*b*), (*iv*)—(*b*), (*v*)—(*b*).

Q. 3. *Match the skill:*

(*i*) Trade winds	(*a*) Incoming solar energy
(*ii*) Loo	(*b*) Seasonal wind
(*iii*) Monsoon	(*c*) Horizontal movement of air
(*iv*) Wind	(*d*) Layer of ozone gas
	(*e*) Permanent wind
	(*f*) Local wind

Ans. (*i*) —(*e*), (*ii*)—(*f*), (*iii*)—(*b*), (*iv*)—(*c*).

Q. 4. *Give reasons:*

(*i*) *Wet clothes take longer time to dry on a humid day.*

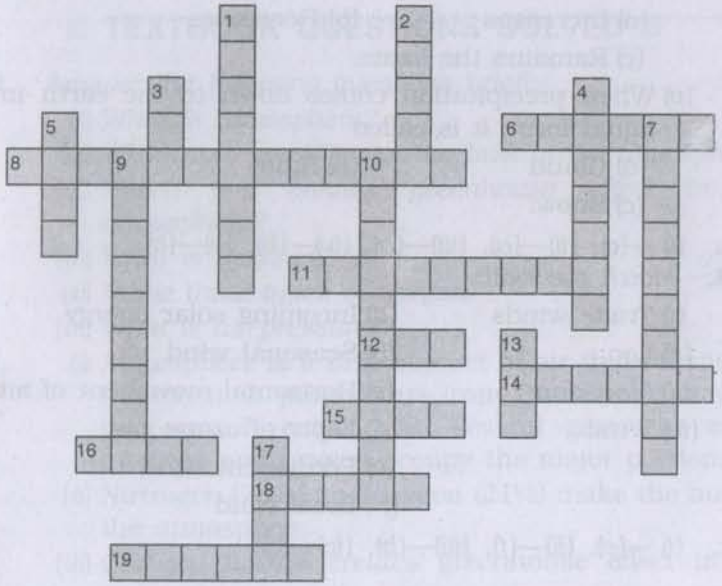
(*ii*) *Amount of insolation decreases from equator torwards poles?*

Ans. (*i*) On a humid day the air is full of water vapour. Hence, evaporation is very slow. This is the reason why wet clothes take longer time to dry on a humid day.

(*ii*) Insolation comes through vertical rays on equator. Thus, it covers up less space but we feel more heat there when it goes up from equator towards poles, the sun rays become slanting. Needless to say that slanting rays come on the earth covering longer distance. Although these slanting rays heat up more space, the degree of hotness is felt less. This is the reason why amount of insolation decreases from equator towards poles.

Q. 5. *For Fun*

(*i*) *Solve this crossword puzzle with the help of given clues:*



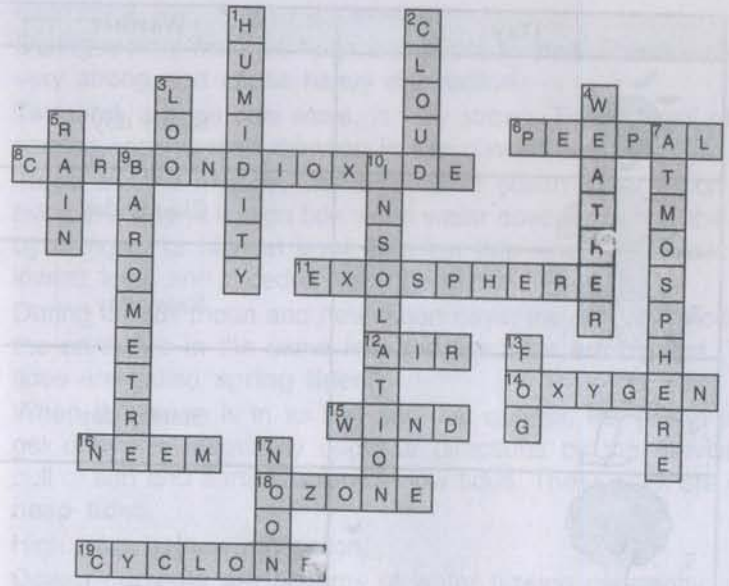
Across

6. An Indian tree having extraordinary quality of providing oxygen round the clock
8. Gas present in atmosphere occupying only 0.03% by volume
11. Outermost layer of atmosphere
12. Mixture of many gases
14. Life giving gas
15. Air in motion
16. An indian tree valued highly for medicinal properties
18. Gas protecting us from harmful sunrays
19. Low pressure area

Down

1. Amount of water vapour in air
2. Condensation of water vapour around dust particles in atmosphere
3. Example of local wind blowing in summer in northern India
4. Short term changes in atmosphere
5. Precipitation in liquid form
7. Blanket of air around the earth
9. Instrument of measure pressure
10. Incoming solar radiation
13. Reduces visibility in winters
17. It is ..... time when sun is overhead

Ans.



(ii) *Make a weather calender for one week. Use pictures on symbols to show different types of weather. You can use more than one symbol in a day, if the weather changes. For example the sun comes out when rain stops. An exmaple is given below:*

Day	*Weather*
1. 	Sunny day
2.	
3.	
4.	
5.	
6.	
7.	

Ans.

Day	Weather
1. 	Sunny day
2. 	Cloudy day
3. 	Rainy day
4. 	Stormy day
5. 	Calm day

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