CHAPTER 15

Air Around Us

Assess Yourself 1

1. (a) see or smell, feel (b) gases (c) nitrogen (d) Oxygen
2. (a) False; Oxygen is a life supporting gas prominent in respiration.
   (b) False; About four-fifth of air by volume is nitrogen.
   (c) False; Air occupies space.
   (d) False; The amount of nitrogen is constant at all places.

Assess Yourself 2

1. The animals and plants living in soil breathe in air trapped between the particles of soil.
2. The balance of oxygen and carbon dioxide is maintained in the atmosphere by the oxygen released by plants during photosynthesis and carbon dioxide released by human, animals, etc. in the atmosphere. The balance of oxygen and carbon dioxide is made due to respiration and photosynthesis.
3. Nitrogen oxides released from automobiles affect the respiratory system of animals and defoliation leading to death of some plants.
4. (a) More and more trees should be grown.
   (b) Industries should be located far away from residential areas.

SECTION-B

A. I. 1. (c) 2. (c) 3. (b) 4. (d) 5. (c)

II. 1. True

2. False; Plants consume carbon dioxide for respiration and produce oxygen.
3. True
4. True
5. False; Wheathercock shows the direction in which the air is moving at that place.

III. 1. ATMOSPHERE
2. OXYGEN
3. WINDMILL
4. NITROGEN
5. RESPIRATION

B. I. 1. Yes
2. Carbon dioxide
3. Nitrogen
4. Forest fires and volcanic eruptions
5. Oxygen
6. From oxygen dissolve in water

II. 1. Refer to Activity 3 on page 220.
2. Refer to Activity 2 on page 218.
3. Candle burning stops when the oxygen inside the jar vanishes since oxygen is mandatory for burning.
4. Take ice cubes in a beaker and kept it open place for some time. You will notice that around the beaker there are some water droplets. This droplets formed are due to condensation of water vapor around the beaker. This confirms the presence of water vapour in air.
5. Plants create the majority of the **oxygen** we breathe through a process called photosynthesis. In this process plants use carbon dioxide, sunlight, and water to create energy. Some **oxygen** is produced when sunlight reacts with water vapor in the **atmosphere**.
6. Find a sunny room in your school/home. Close all the doors and windows with curtains pulled down to make the room dark. Now, open the door or a window facing the sun, just a little, in such a way that it allows sunlight to enter the room only through a slit. Look carefully at the incoming beam

of sunlight. You will see some tiny shining particles moving in the beam of sunlight, these are the dust particles.

III. 1. Our earth is surrounded by a thin layer of air. The envelope of air that surrounds the earth is called atmosphere. Its uses are as follows:

(a) The atmosphere is the great fund and storehouse of life to plants and animals; its carbonic acid is the food of the one, and its oxygen the nourishment of the other; without its carbonic acid the whole vegetable kingdom would wither, and without its oxygen the blood of animals, "which is the life thereof," would be only serum and water.

(b) It is a refractor of light. Without it the sun's rays would fall perpendicularly and directly on isolated portions of the world, and with a velocity which would probably render them invisible; but by means of the atmosphere they are diffused in a softened effulgence through the entire globe.

(c) It is a reflector of light. Hence its mysterious, beautiful, and poetical blue, contrasting and yet harmonising with the green mantle of the world.

(d) It is the conservator, disperser and modifier of heat. By its hot currents constantly flung from the equatorial regions of the world, even the cold of the frigid zones is deprived of its otherwise unbearable rigour; while the mass of cold air always rushing from about the poles towards the equator quenches half the heat of tropical suns, and condenses the vapour so needful to the luxuriant vegetation.

2. Wind is the flow of gases on a large scale. On the surface of the earth, wind consists of the bulk movement of air. Windmills usually were used to mill grain (gristmills), pump water (windpumps), or both. The majority of modern windmills take the form of wind turbines used to generate electricity, or wind pumps used to pump water, either for land drainage or to extract groundwater.

3. In water, phytoplankton and macro algae produce oxygen during photosynthesis. This is available to animals in the water, zooplankton and fish and also to the aerobic bacteria.

Oxygen dissolves in water, the saturation level is 9 mg/L at 20°C. It is lower at higher temperatures. This dissolved oxygen is consumed by the fish, etc.

4. Steps to reduce air pollution:

(a) **Reduce** the number of trips you take in your car.

(b) **Reduce** or eliminate fireplace and wood stove use.

(c) Avoid burning leaves, trash and other materials.

C. 1. With increase in altitude, atmosphere becomes thin and amount of oxygen is reduced drastically. Therefore mountaineers carry oxygen cylinders with them to avoid breathing problems.

2. X is caustic soda, Y is carbon dioxide and Z is nitrogen.

D. 1. The beam of sunlight contains dust particles.

2. Nisha is well aware girl and shares her knowledge with others.