



**CLASS X- SUBJECT: BIOLOGY**

**CHAPTER: LIFE PROCESSES**

**Guidelines:-**

**Dear Students,**

- Refer to the following content of the chapter
- These notes will help you understand the concept of the lesson and complete the assignment that follows which will be graded on submission
- Do assignment in Biology notebook.
- Link for Textbook:- [http://ncertbooks.prashanthellina.com/10\\_Science.html](http://ncertbooks.prashanthellina.com/10_Science.html)

**TOPIC: RESPIRATION IN ANIMALS**

**Comparison between Breathing and Respiration**

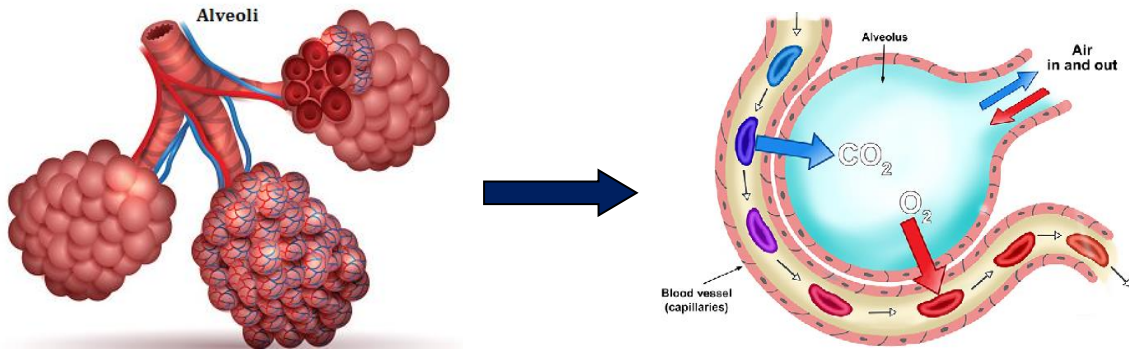
	<b>Breathing</b>	<b>Respiration</b>
1.	<b>It is a physical process</b>	<b>It is a biochemical process</b>
2.	<b>It uses up energy</b>	<b>It releases energy</b>
3.	<b>It occurs in the breathing organs</b>	<b>It occurs in the cells of the body</b>
4.	<b>It is the exchange of gases</b>	<b>It is the breakdown of glucose to release energy</b>

**BREATHING RATE:** It is the number of times an organism breathes in a minute. In humans, the breathing rate is 15-18 times/ minute.

**Mechanism of Breathing**

- Breathing starts with inhalation (**inhalation:** When an individual breathes in, the ribs move outwards and **diaphragm** moves downwards, creating space that allows air into the lungs) of air into the nostrils and then to **pharynx**.
- It travels down the back of the throat and into the **Trachea** (windpipe), which is divided into air passages called **Bronchi**.
- Lungs perform their best when these airways are open.
- As the **bronchi** pass through your lungs, they divide into narrower air passages called **bronchioles**. The bronchioles end in tiny balloon-like air sacs called alveoli. The body has about 600 million **Alveoli**.
- The alveoli are surrounded by a mesh of tiny blood vessels called **capillaries**. Here, oxygen from inhaled air passes into the blood stream.

- After absorbing oxygen, blood goes to the heart which then pumps it through the body to the cells of tissues and organs.
- As the cells use up the oxygen, they make carbon dioxide that now goes into the blood. The blood then carries the carbon dioxide back to the lungs, where it is removed from the body when one exhales. (**Exhalation:** the ribs move inwards and diaphragm moves upwards, pushing the lungs and allowing them to deflate and push the air out).



**Alveoli** are tiny, balloon-shaped air sacs at the very end of the bronchioles and are arranged in clusters throughout the lungs. They help in exchange of oxygen and carbon dioxide in the capillary network that lines them. They are rounded and bulbous so as to increase the surface area for gaseous exchange. They are also richly supplied by blood for the same.

**Alveoli are made up of collagen and elastin, which provides elasticity to the sacs. Smoking damages both these components causing the sacs to harden and thicken and also dilates blood vessels impeding the exchange of oxygen and carbon dioxide.**

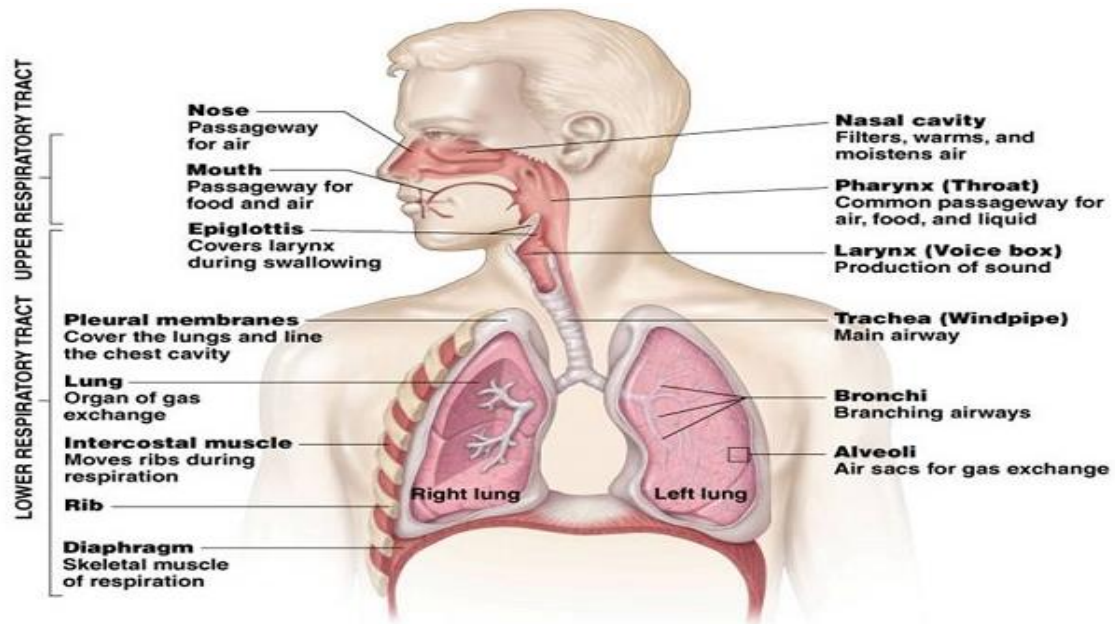
**How is smoking Tobacco dangerous to our health?**

Kindly refer to the link shared below for better understanding of the Human Respiratory System. It will enable you to experience the process visually.

<https://www.youtube.com/watch?v=GjD55C9v38>

## Human Respiratory System

Given below is the diagrammatic representation of Human Respiratory System:



Experiment: To show that carbon dioxide is released during respiration.

- Take some freshly prepared lime water in a test tube
- Blow air through this lime water.
- Use a syringe/ pichkari to pass air through this fresh lime water taken in another test tube.
- The lime water turns milky.



Fresh lime water



Lime water turns milky

Kindly refer to the link shared below for better understanding of the Experiment that "carbon dioxide is released during respiration in animals". It will enable you to experience the process visually.

[https://www.youtube.com/watch?v=34ESzqzf\\_Uo](https://www.youtube.com/watch?v=34ESzqzf_Uo)

## ASSIGNMENT

- Q1. Elaborate upon the role of diaphragm in Breathing.
- Q2. Explain how the structural design of alveoli helps in carrying out effective gaseous exchange.
- Q3. Describe the mechanism of breathing in human beings.
- Q4. Rate of breathing in aquatic animals is much faster than that in terrestrial organisms. Give reasons.
- Q5. Read the article below on COVID-19 and answer the following:
- List any four symptoms associated with this disease.
  - Community spread is the biggest challenge for any country. Comment.

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## FIGHTING A GLOBAL PANDEMIC

### STEPS THE **GOVT** MUST TAKE

- 1 AGGRESSIVE, RANDOM TESTING**  
Aggressive and random testing is crucial, even for people who show no symptoms. Random testing is done to identify people who are carriers 
- 2 INCREASE HEALTH CARE CAPACITY**  
Since Indian cases are largely travel-related, strict screening is needed at air, sea ports, etc. Increasing labs, procuring more test kits and better equipping hospitals will also help 
- 3 ROPE IN PRIVATE SECTOR**  
India's private sector has a massive and well-equipped network of labs to carry out viral testing. Pvt hospitals can also be used to ease burden of overloaded govt hospitals 
- 4 CONTACT LISTING, FOLLOW-UPS**  
International travellers, contacts of positive cases must be strictly followed up even after their initial tests in order to pick up people who develop symptoms early 
- 5 CONSIDER PRE-EMPTIVE LOCKDOWN**  
China's area-specific lockdown has nearly wiped out new cases in the country. It is a model that has also been applied in other countries such as Italy and Iran, but not until it was too late 

### STEPS **YOU** MUST TAKE

- 1 NEVER CONCEAL SYMPTOMS**  
Do not take a paracetamol before boarding the plane to avoid getting picked up in thermal screening at airports. If you have symptoms, report it to authorities immediately 
- 2 TAKE SELF-QUARANTINE SERIOUSLY**  
Home quarantine is key to ensure infections don't spread. So if you've come in contact with a confirmed patient, you must avoid all physical contact with others for 14 days 
- 3 DON'T BE AFRAID OF ISOLATION WARDS**  
For those who get infected, hospital isolation is vital. Evading isolation wards means you are putting not just your life, but also the lives of others in danger 
- 4 FOLLOW STRICT HYGIENE**  
Washing hands with soap or an alcohol-based hand rub is very important. Following cough etiquette such as coughing/sneezing into your elbow is also key 
- 5 CUT OUT NON-ESSENTIAL TRAVEL**  
Mass gatherings and travel through high-footfall areas can be hot-bed for spreading or contracting infection, which is why government advises to refrain from both 



**THE IMPORTANCE OF MEASURES AT HOME, THE OFFICE**  
FULL REPORT ON »P10

**HOW TO SELF-QUARANTINE**  
A look at what a self-quarantine entails and the measures that must be taken in case you need to be contained to your house

**ENSURING A SAFE WORKSPACE**  
A guide that enlists the best practices companies and workers should deploy to ensure offices remain safe spaces

