

# RRB NTPC / GROUP - D

8:30 PM  
14<sup>TH</sup> SEPTEMBER 2020



## BIOLOGY

CLASS 1

DR. AAKRITI RAJ





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## RRB NTPC 1<sup>st</sup> Stage CBT 2020 Exam Pattern

Subjects	Number of Questions (Objective Multiple Choice Questions of 1 mark each)	Duration
1) General Awareness	40	1 hour 30 minutes
2) Mathematics	30	(2 Hours for PwBD Candidates)
3) General Intelligence & Reasoning	30	
Total	100 Questions of 100 marks	



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## RRB NTPC 2<sup>nd</sup> Stage CBT 2020 Exam Pattern

Subjects	Number of Questions (Objective Multiple Choice Questions of 1 mark each)	Duration
General Awareness	50	1 Hour 30 Minutes
Mathematics	35	(2 Hours for PwBD Candidates)
General Intelligence and Reasoning	35	
Total	120 Questions of 120 marks	



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## RRB Group D Exam Pattern CBT

### RRB Group D Exam Pattern – CBT

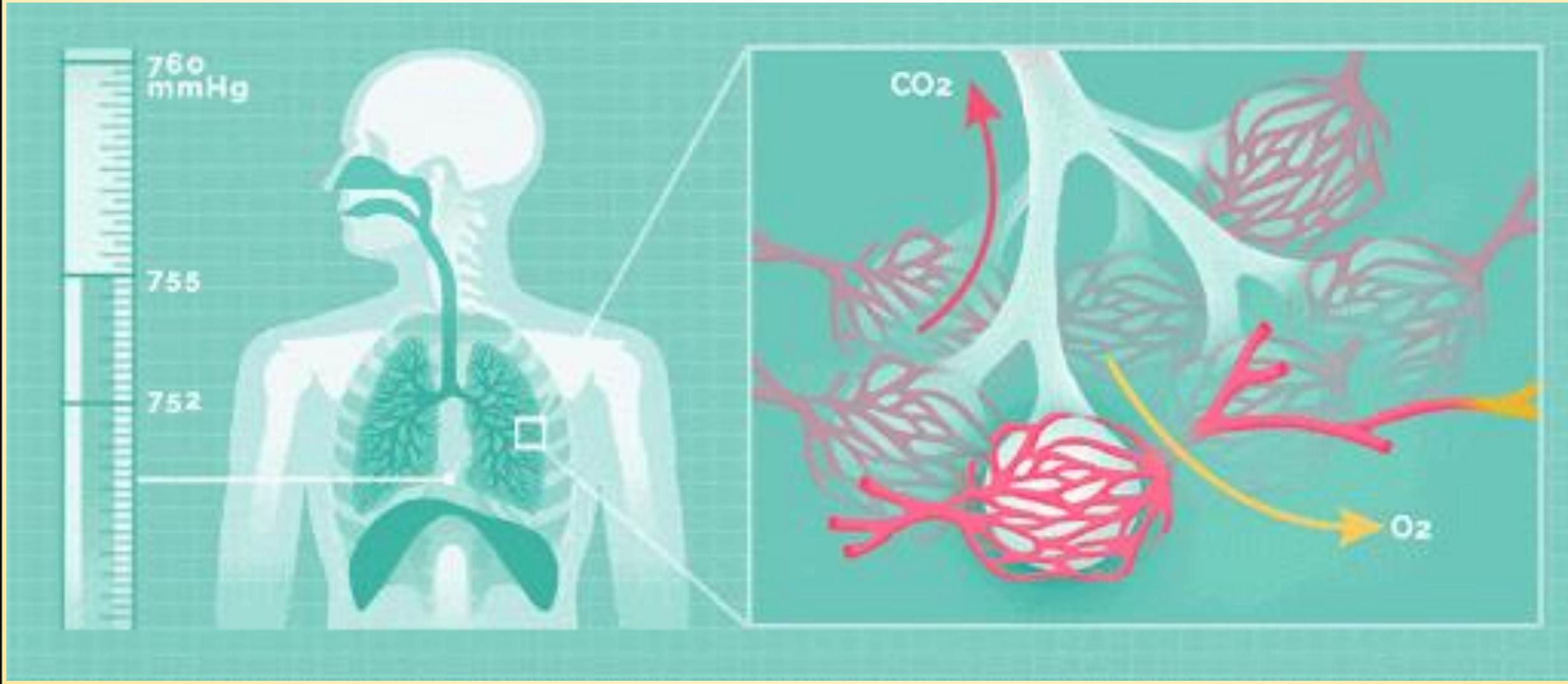
Sections	Number of Questions	Time Duration
General Awareness/Current Affairs	20	90 minutes
Mathematics	25	
General Science	25	
General Intelligence & Reasoning	30	



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**RESPIRATION :** It is exchange of O<sub>2</sub> and CO<sub>2</sub> between environment and cells of body

where organic nutrients are broken down enzymatically to release energy.

**स्वस्न:** यह पर्यावरण और शरीर की कोशिकाओं के बीच O<sub>2</sub> और CO<sub>2</sub> का आदान-प्रदान है

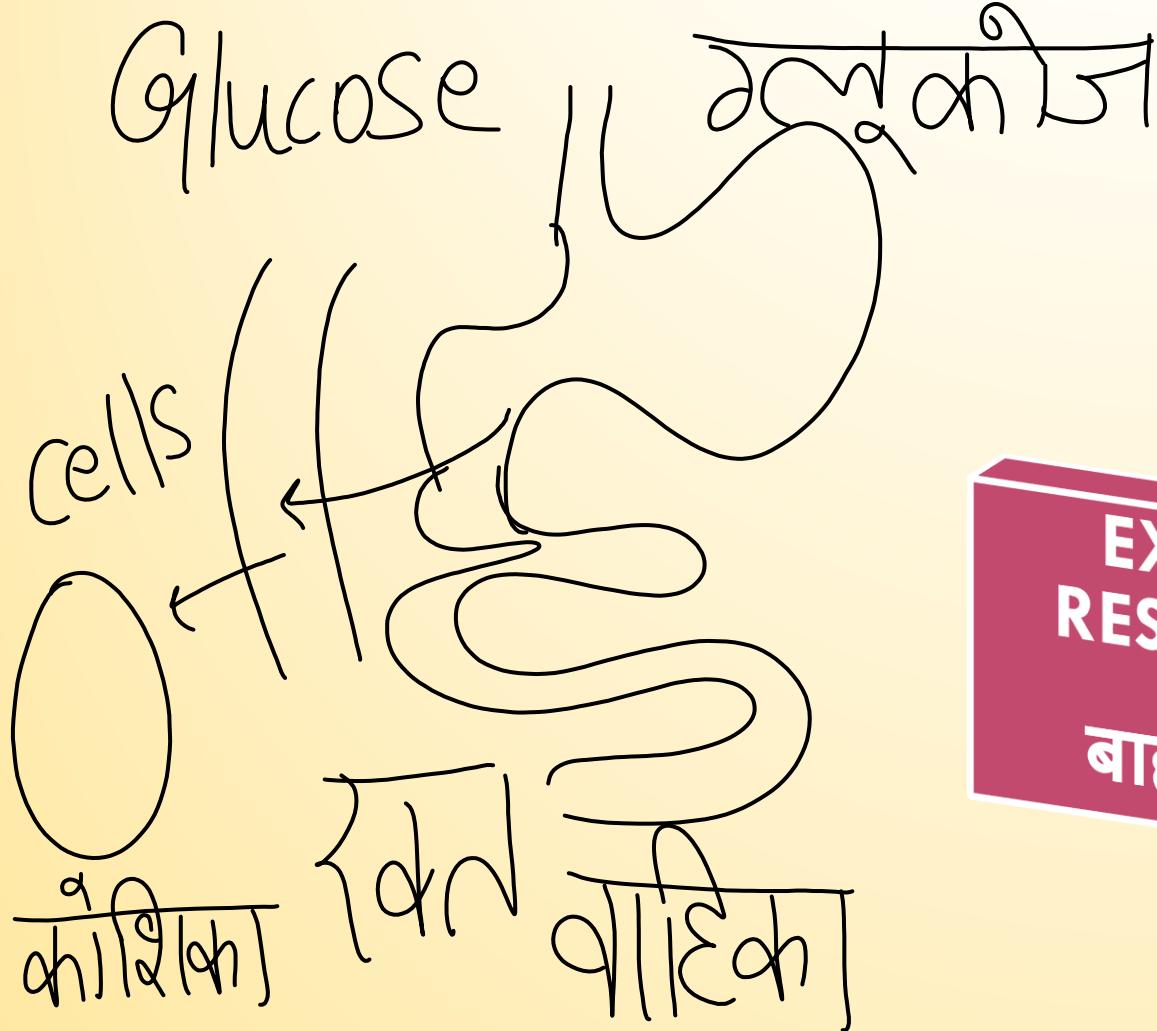
जहां ऊर्जा को रिलीज करने के लिए जैविक रूप से पोषक तत्वों को तोड़ दिया जाता है।



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**RESPIRATION**  
श्वसन

**EXTERNAL RESPIRATION**  
बाहरी श्वसन

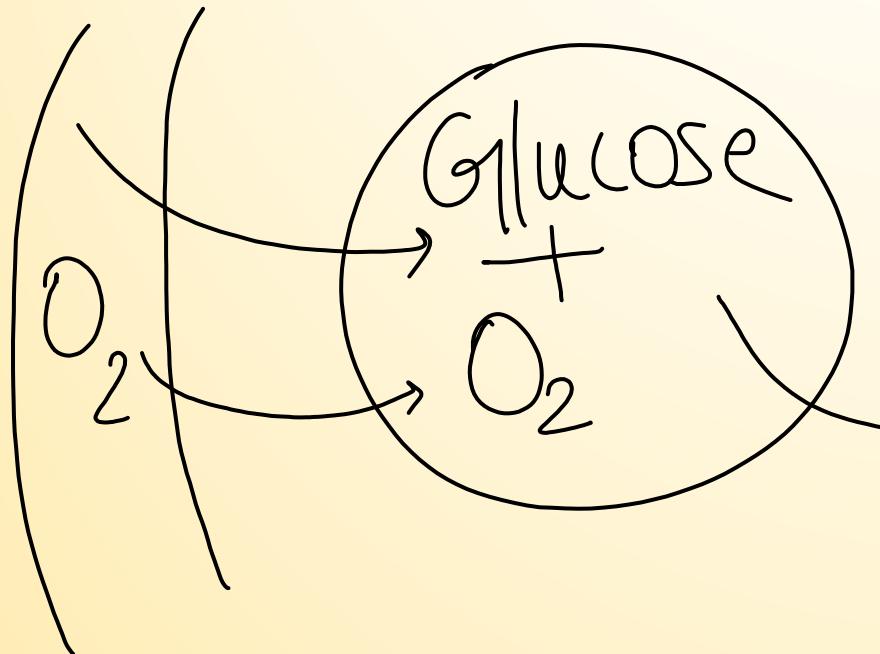
**INTERNAL RESPIRATION**  
आंतरिक श्वसन



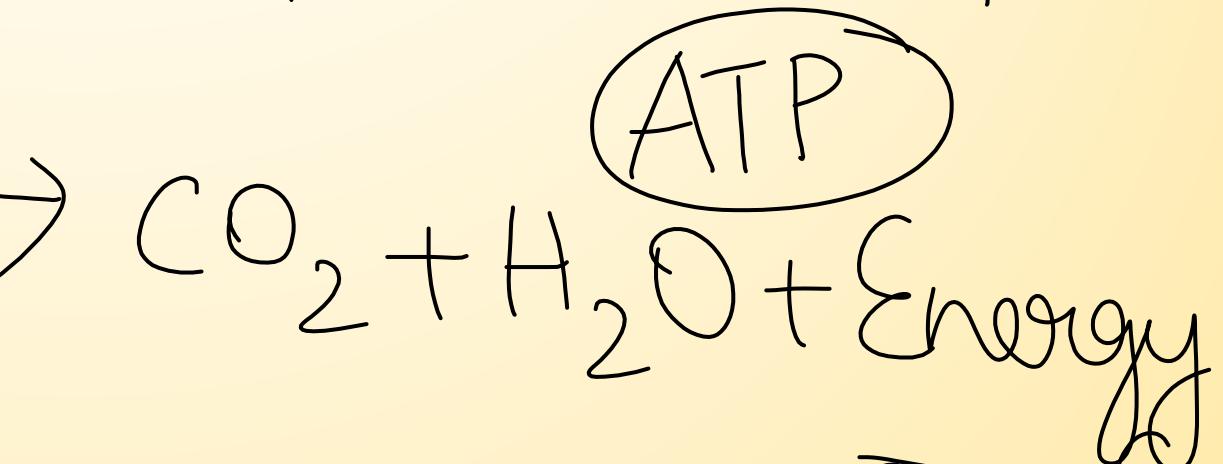
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Cell की विकासन



Blood Vessel रानपर्टेशन

अंतर्राष्ट्रीय



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ATP → Adenosine Tri Phosphate  
Energy currency  
ऊर्जा



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## EXTERNAL RESPIRATION/ बाहरी श्वसन

- External respiration — It involves exchange of respiratory gases between blood and inhaled air/water at respiratory surface.
- बाहरी श्वसन - इसमें श्वसन सतह पर रक्त और सॉस की हवा / पानी के बीच श्वसन गैसों का आदान-प्रदान शामिल है।



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## INTERNAL RESPIRATION/आंतरिक श्वसन

- Also called tissue or cellular respiration. ऊतक या कोशिकीय श्वसन भी कहा जाता है
- It consists of Diffusion of O<sub>2</sub> from blood into tissue cells through tissue fluid
- यह ऊतक द्रव के माध्यम से ऊतक कोशिकाओं में रक्त से O<sub>2</sub> के प्रसार के होते हैं
- Enzymatic breakdown of nutrients producing CO<sub>2</sub>, H<sub>2</sub>O and energy
- CO<sub>2</sub>, H<sub>2</sub>O और ऊर्जा का उत्पादन करने वाले पोषक तत्वों का एंजाइमेटिक ब्रेकडाउन
- Storage of energy in form of ATP एटीपी के रूप में ऊर्जा का भंडारण
- Diffusion of CO<sub>2</sub> into blood from tissues through tissue fluid.
- ऊतक द्रव के माध्यम से ऊतकों से रक्त में CO<sub>2</sub> प्रसार।



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## DIAPHRAGM/ डायाफ्राम

Most important respiratory muscle

सबसे महत्वपूर्ण श्वसन मांसपेशी

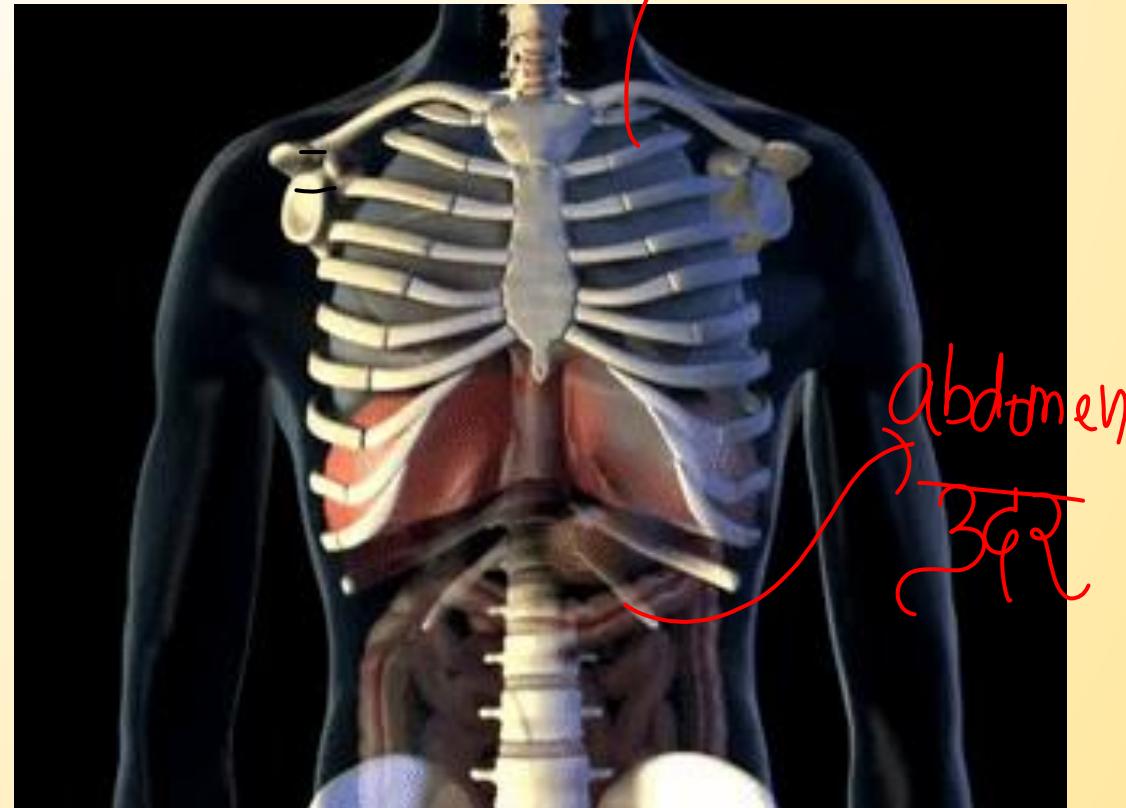
INTERCOASTAL MUSCLE

इंटरकॉस्टल मांसपेशी

ALSO IMPORTANT IN RESPIRATION

श्वसन में महत्वपूर्ण है

Inter → बीच से  
Coastal → Ribs  
पृष्ठी



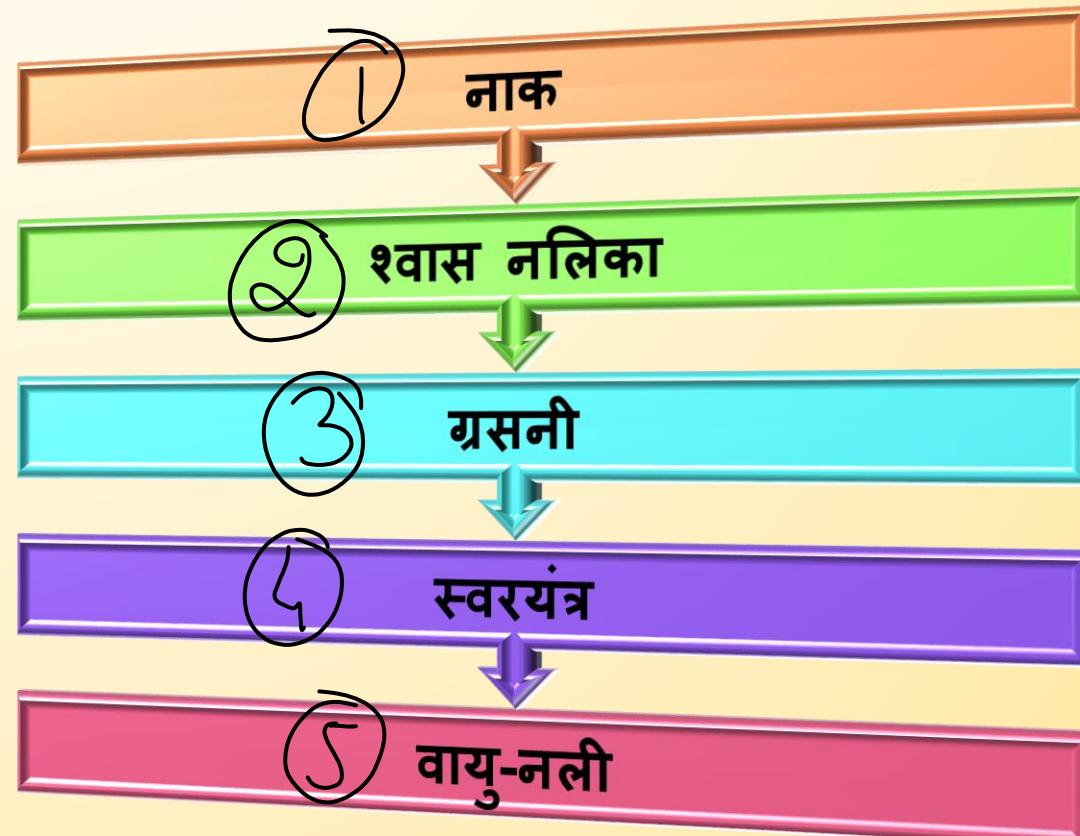
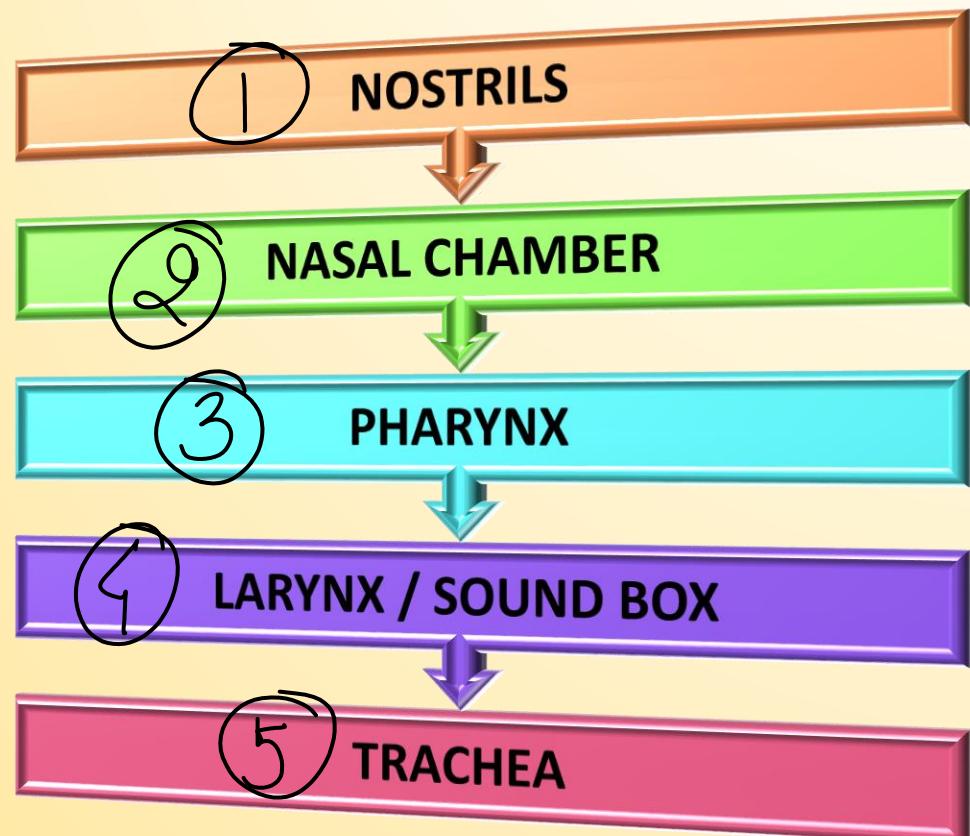


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## RESPIRATORY PATHWAY



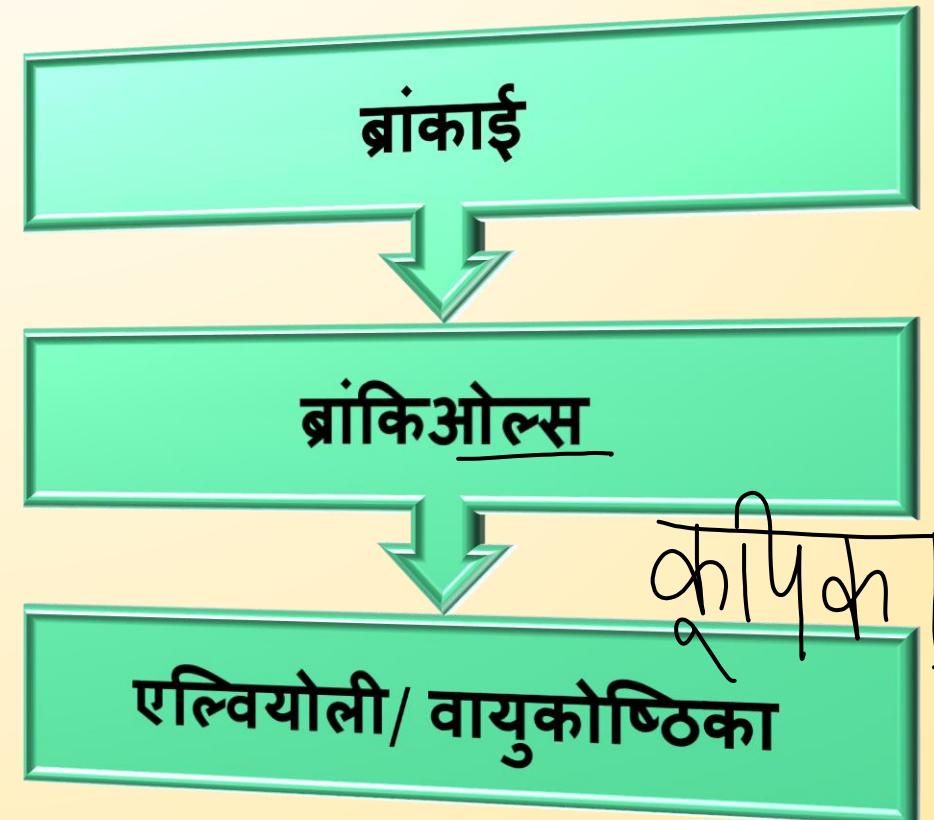
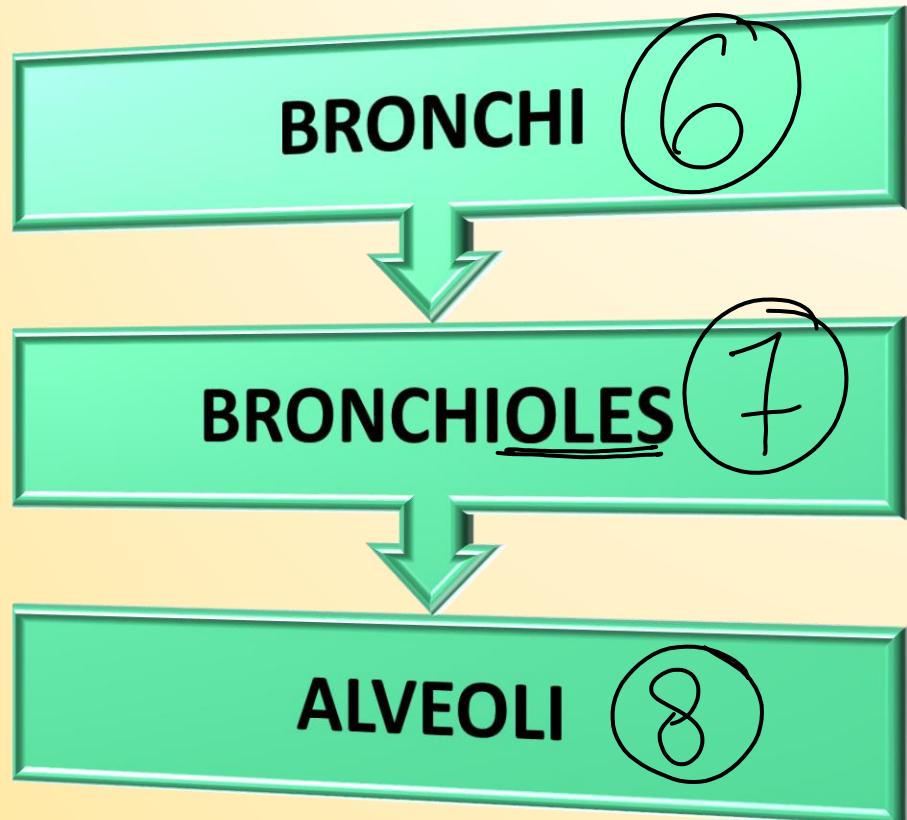


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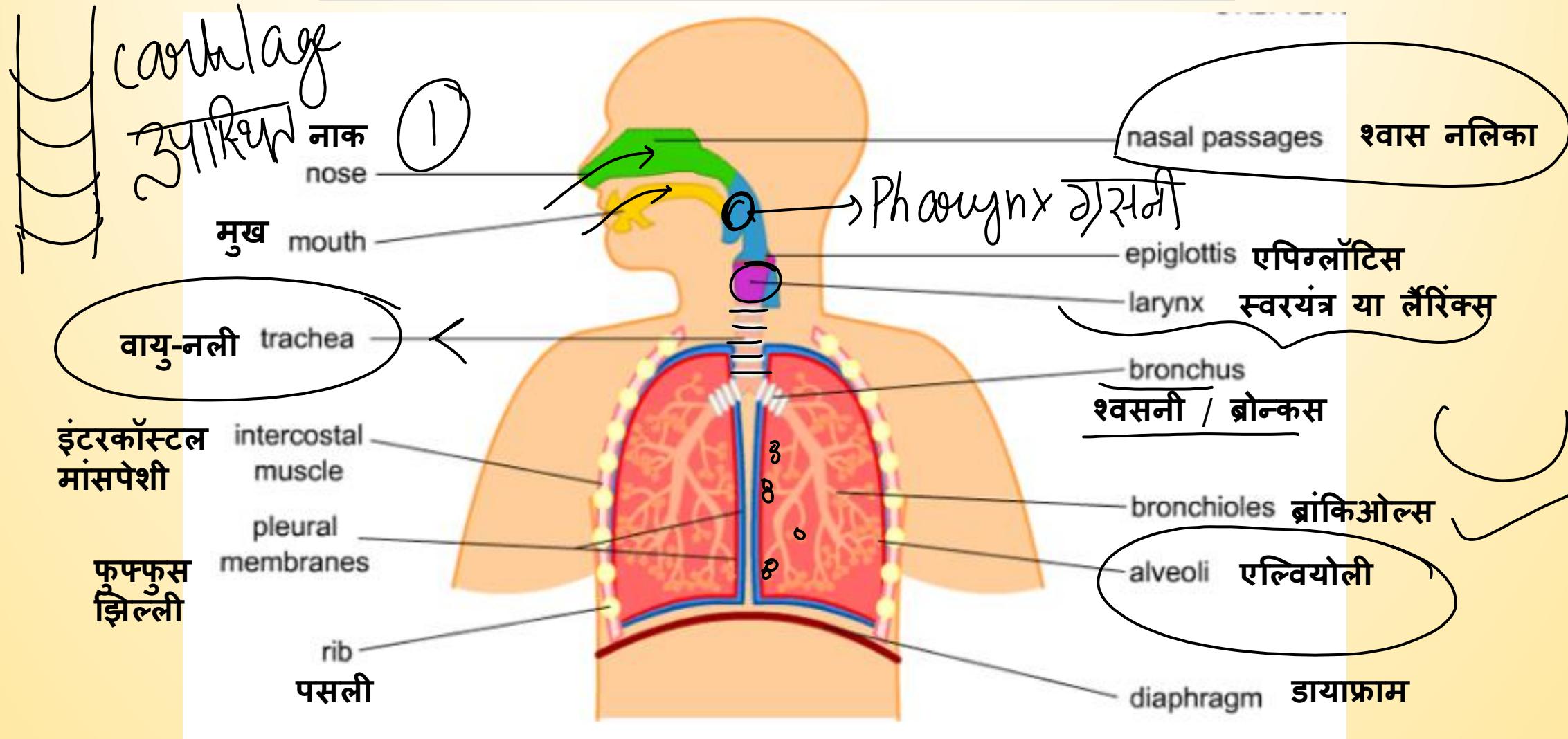
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## RESPIRATORY PATHWAY



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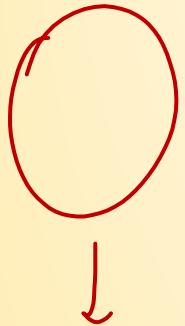




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Surface  
Area



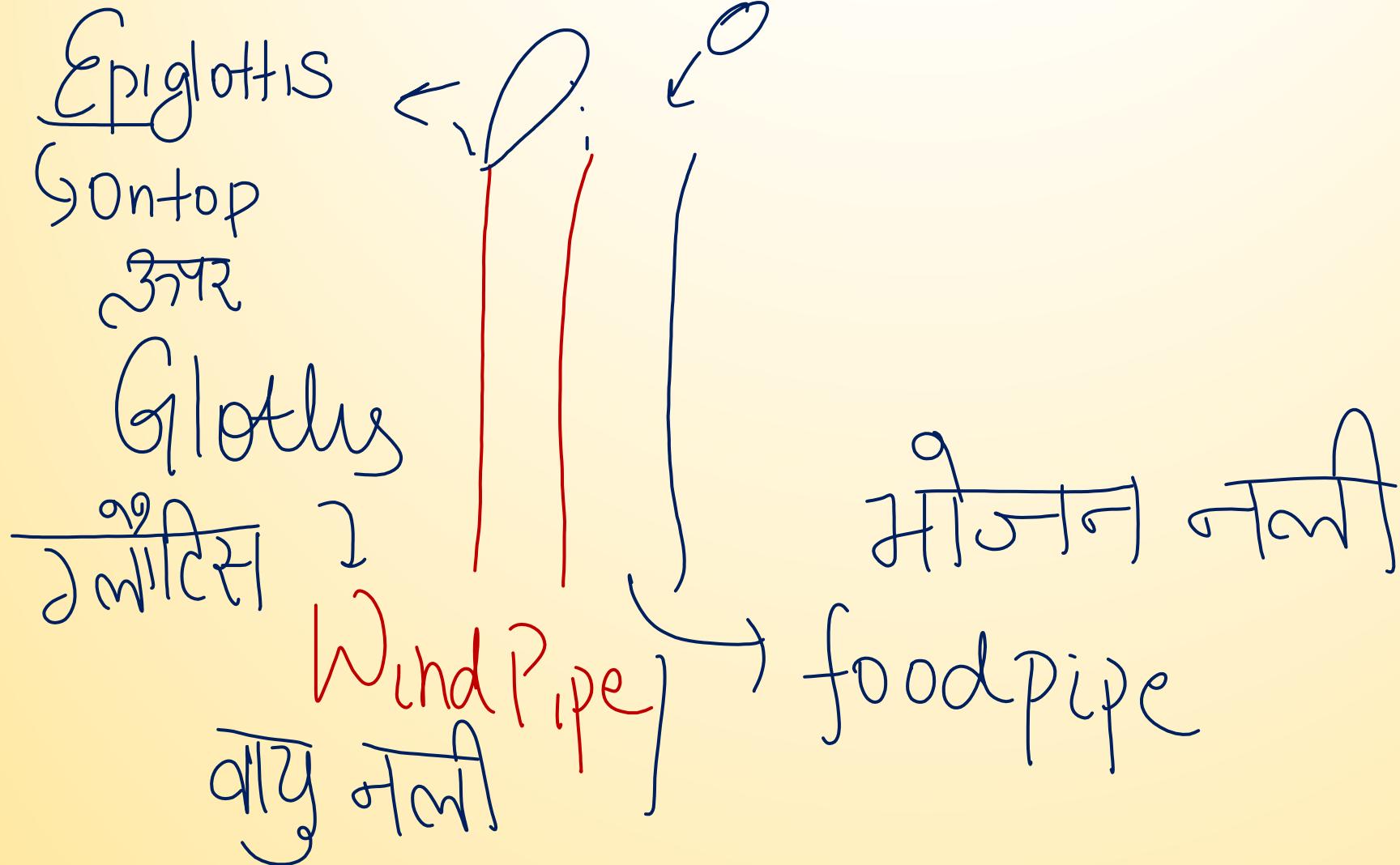
Surface  
Area  
R&E  
of  
Lungs



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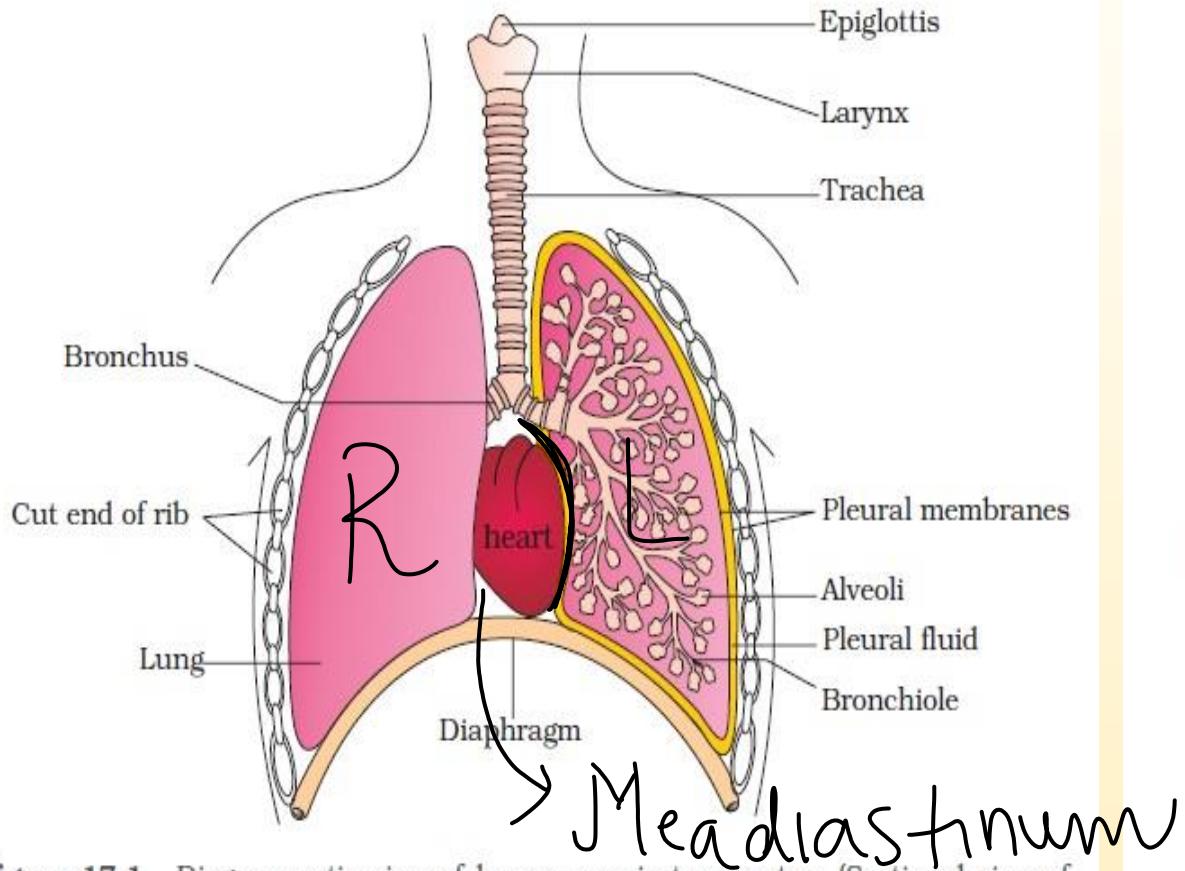
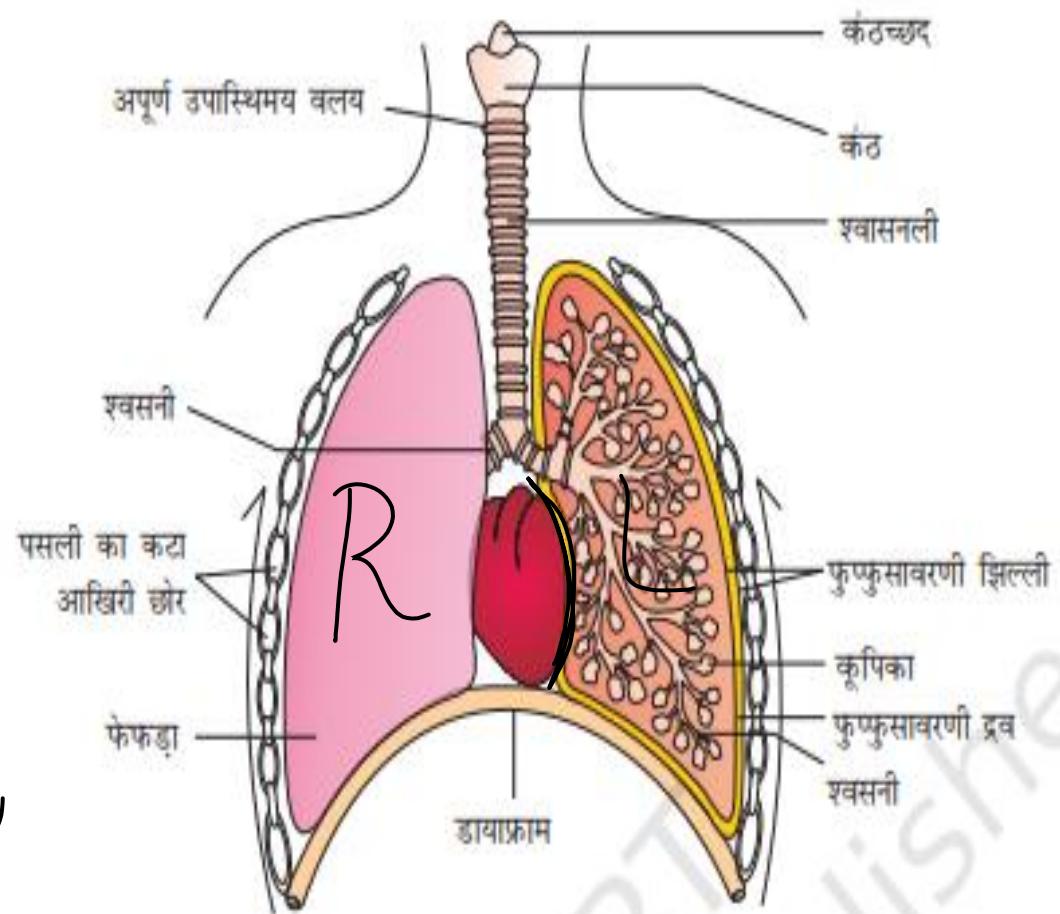


Figure 17.1 Diagrammatic view of human respiratory system (Sectional view of the left lung is also shown)





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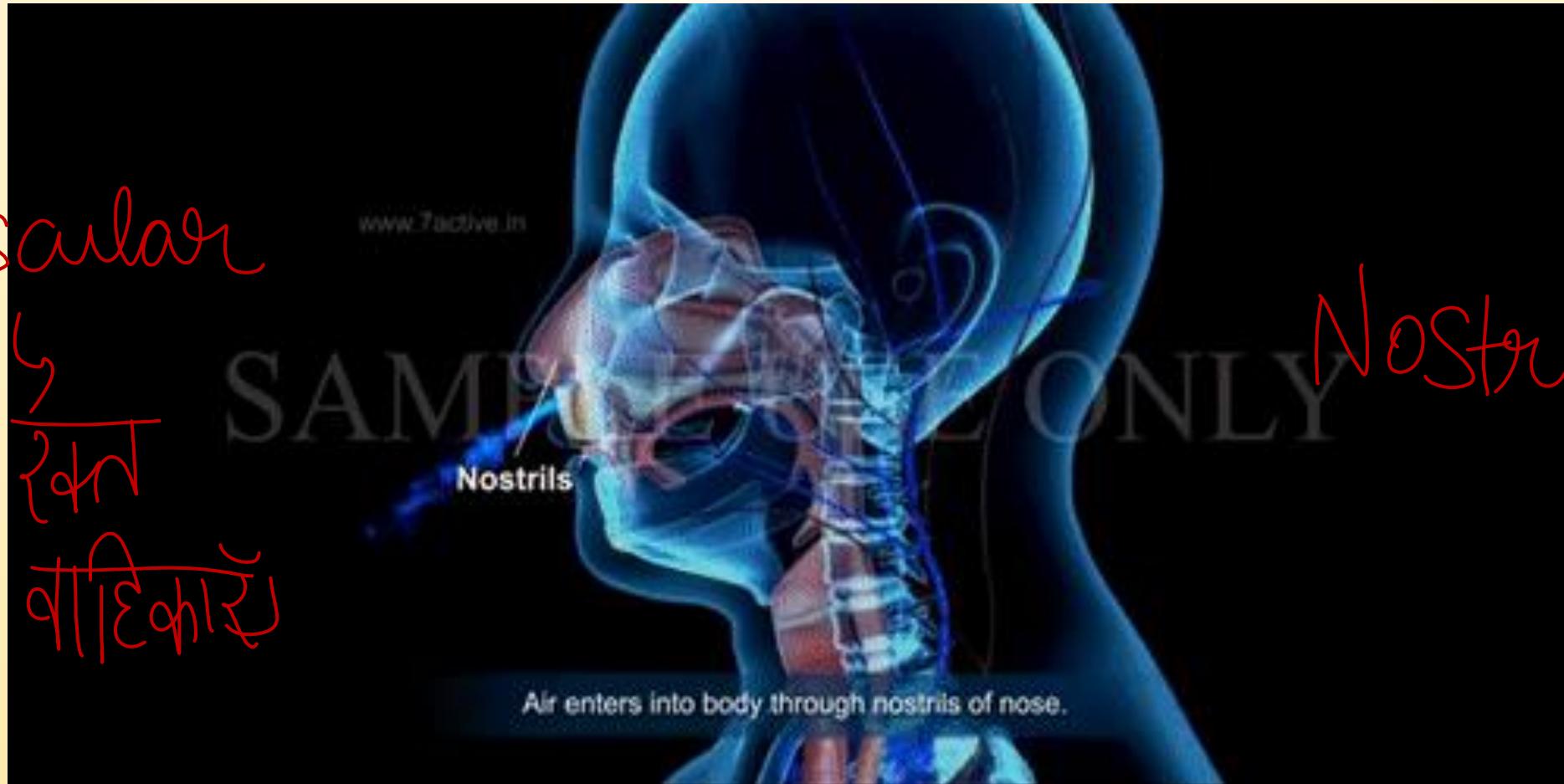
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Vasalar  
वासलर  
वाईसोरी

Air enters into body through nostrils of nose.

Nostrils



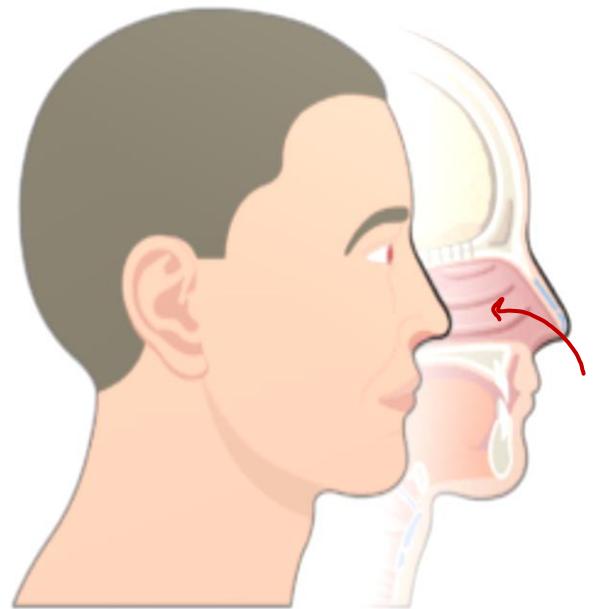


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## INTRODUCTION



### FUN FACT

★ We breathe 17000-23000 times in a day.

- NOSTRILS → NASAL CHAMBER
- Nasal chamber contains cilia which produce mucus
  - Functions of mucus:
    1. Filtration of air- Traps dust particles, pollutants
    2. Warming and humidification of air- prevents drying of respiratory membranes



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- हम एक दिन में 17000-23000 बार सांस लेते हैं।
- NOSTRILS नाक NASAL CHAMBER नाक का चैम्बर
- नाक कक्ष में सिलिया होता है जो श्लेम का उत्पादन करता है
- श्लेम के कार्यः
  - हवा का निस्पंदन- धूल के कण, प्रदूषक मारने के लिए
  - हवा का वार्मिंग और आट्रीकरण- श्वसन झिल्ली के सूखने से बचाता है