

# 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 Hours for PwBD Candidates)
2) Mathematics	30	
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 (2 Hours for PwBD Candidates)
Mathematics	35	
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	

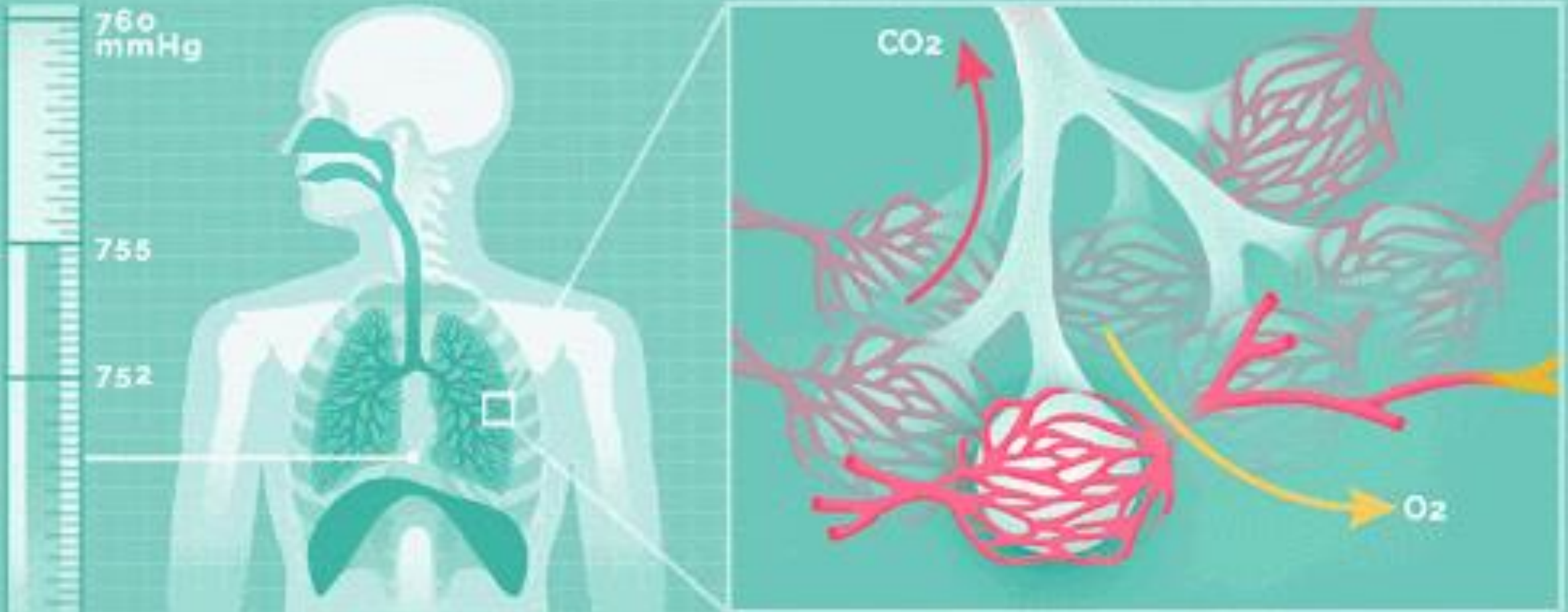




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**RESPIRATION** : It is exchange of  $O_2$  and  $CO_2$  between environment and cells of body

where organic nutrients are broken down enzymatically to release energy.

**श्वसन**: यह पर्यावरण और शरीर की कोशिकाओं के बीच  $O_2$  और  $CO_2$  का आदान-प्रदान है

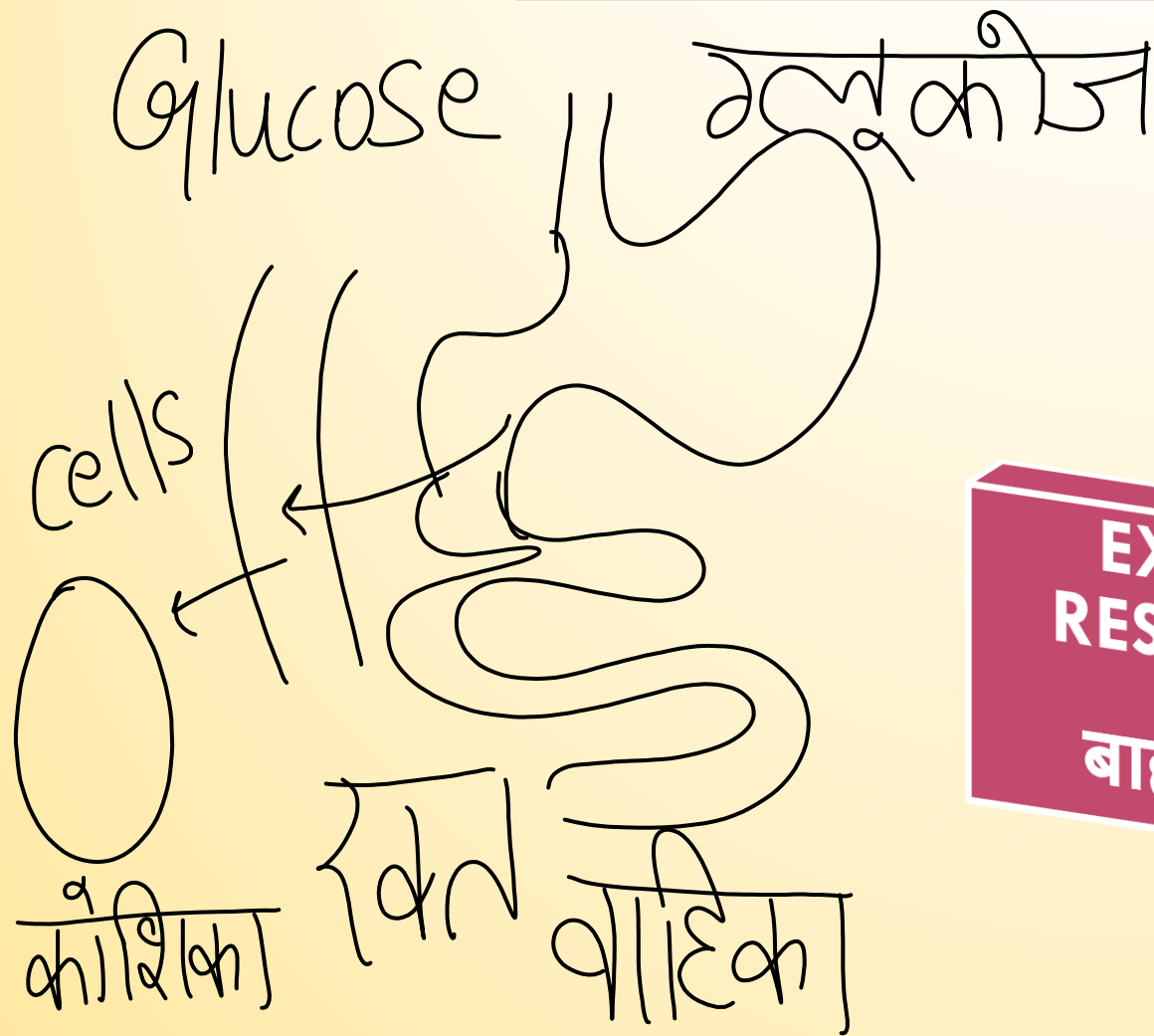
जहां ऊर्जा को रिलीज करने के लिए जैविक रूप से पोषक तत्वों को तोड़ दिया जाता है।



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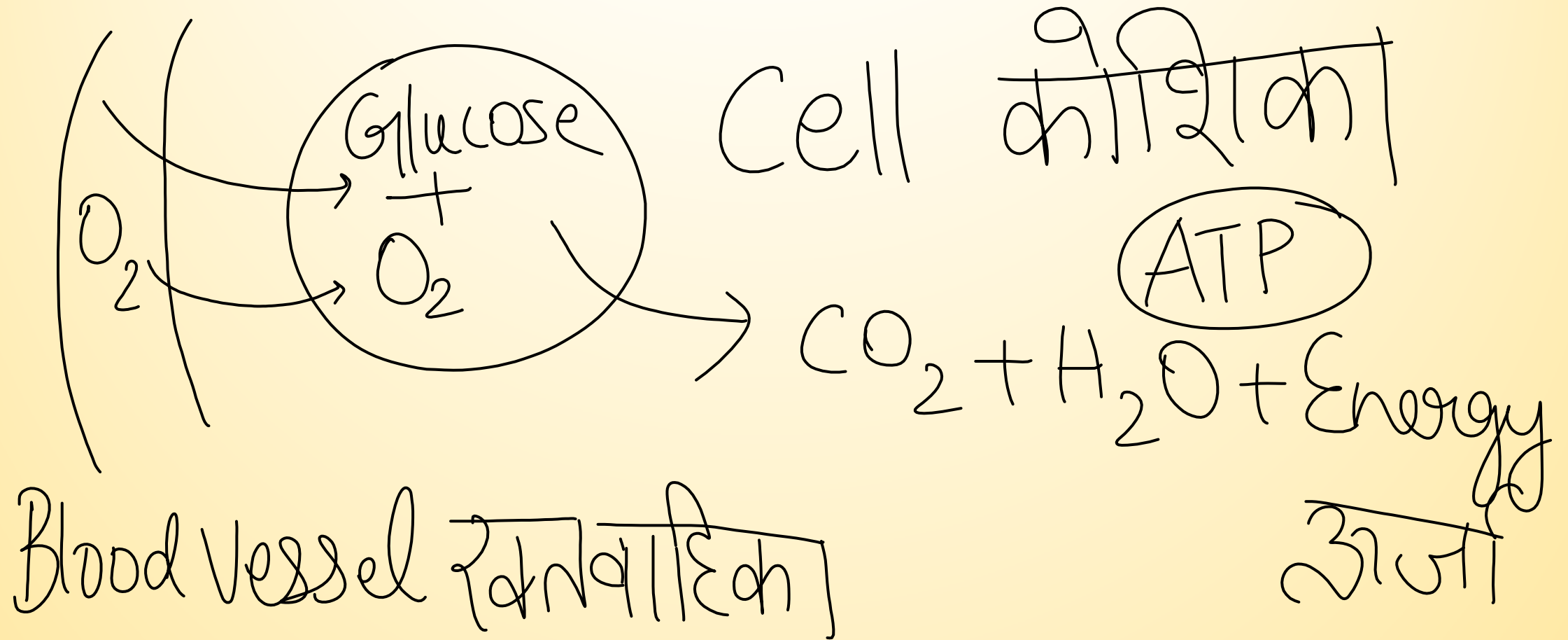
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RESPIRATION  
श्वसन

EXTERNAL  
RESPIRATION  
बाहरी श्वसन

INTERNAL  
RESPIRATION  
आंतरिक श्वसन







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ATP → Adenosine Tri Phosphate  
→ Energy currency  
→ अणु



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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 साँस 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  $O_2$  from blood into tissue cells through tissue fluid
- यह ऊतक द्रव के माध्यम से ऊतक कोशिकाओं में रक्त से  $O_2$  के प्रसार के होते हैं
- Enzymatic breakdown of nutrients producing  $CO_2$ ,  $H_2O$  and energy
- $CO_2$ ,  $H_2O$  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  $CO_2$  into blood from tissues through tissue fluid.
- ऊतक द्रव के माध्यम से ऊतकों से रक्त में  $CO_2$  प्रसार।



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## DIAPHRAGM/ डायफ्राम

Most important respiratory muscle

सबसे महत्वपूर्ण श्वसन मांसपेशी

INTERCOASTAL MUSCLE

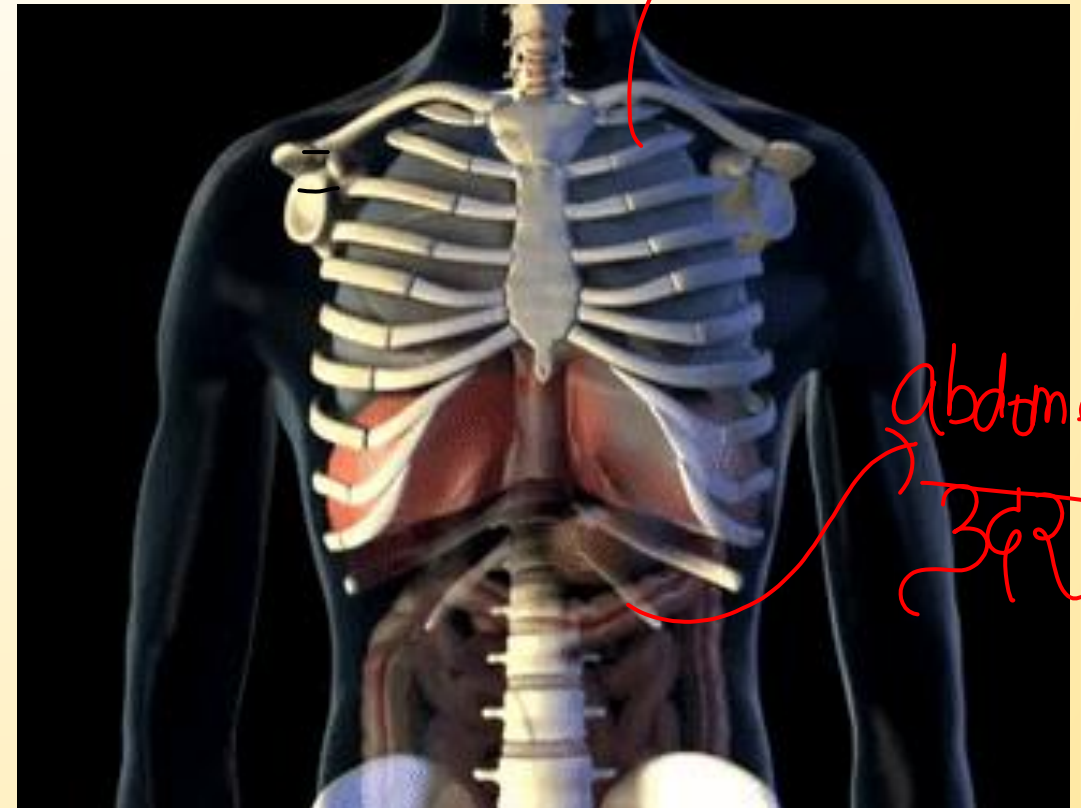
इंटरकॉस्टल मांसपेशी

ALSO IMPORTANT IN RESPIRATION

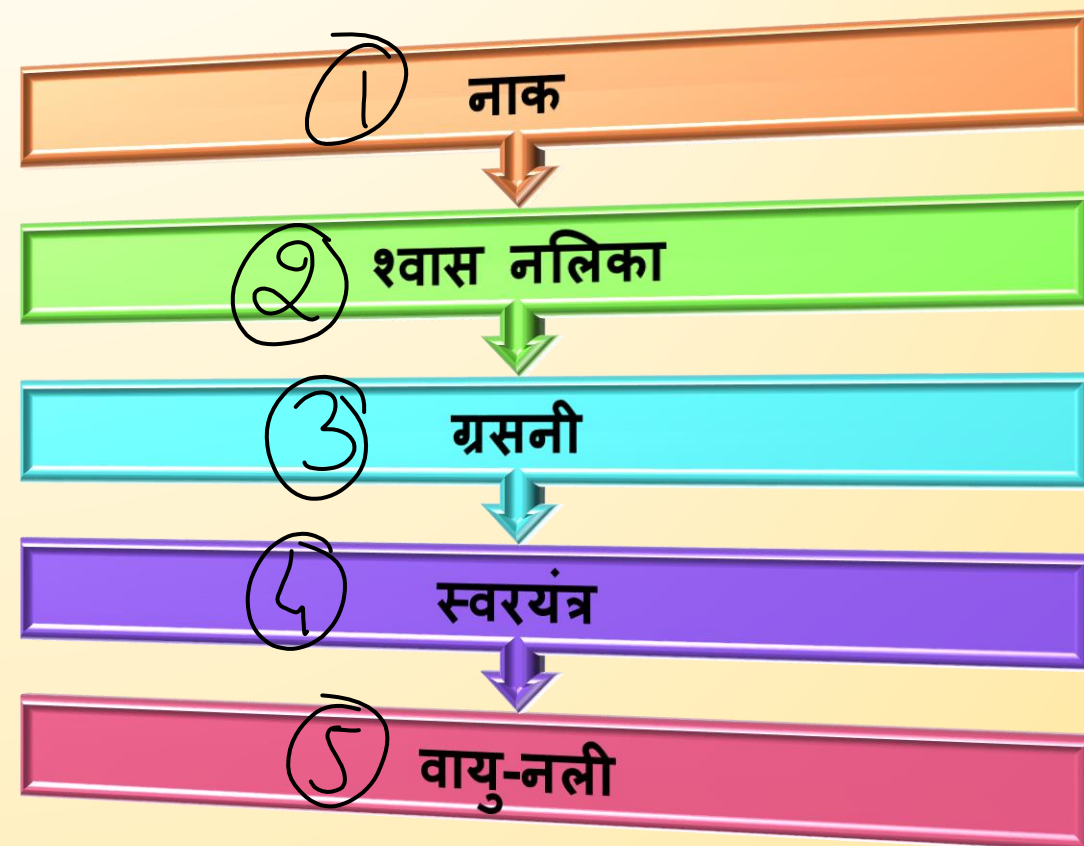
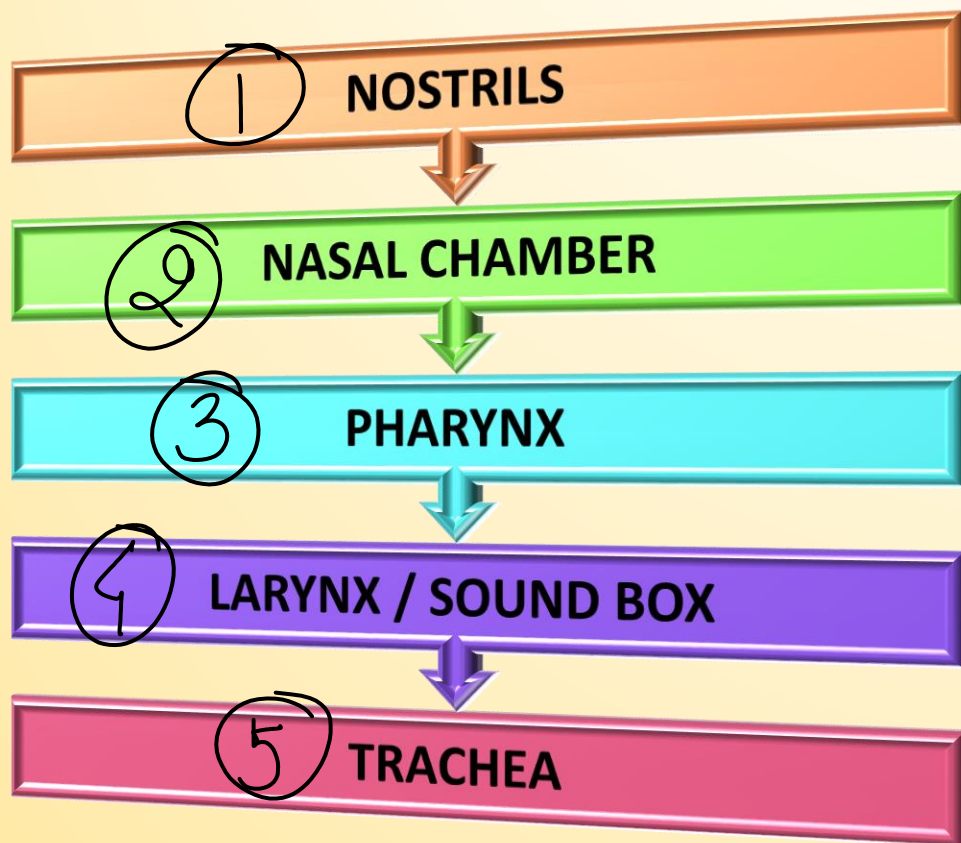
श्वसन में महत्वपूर्ण है

Inter → बीच में  
Coastal → Ribs/  
पसली

Thoracic वक्ष



## RESPIRATORY PATHWAY





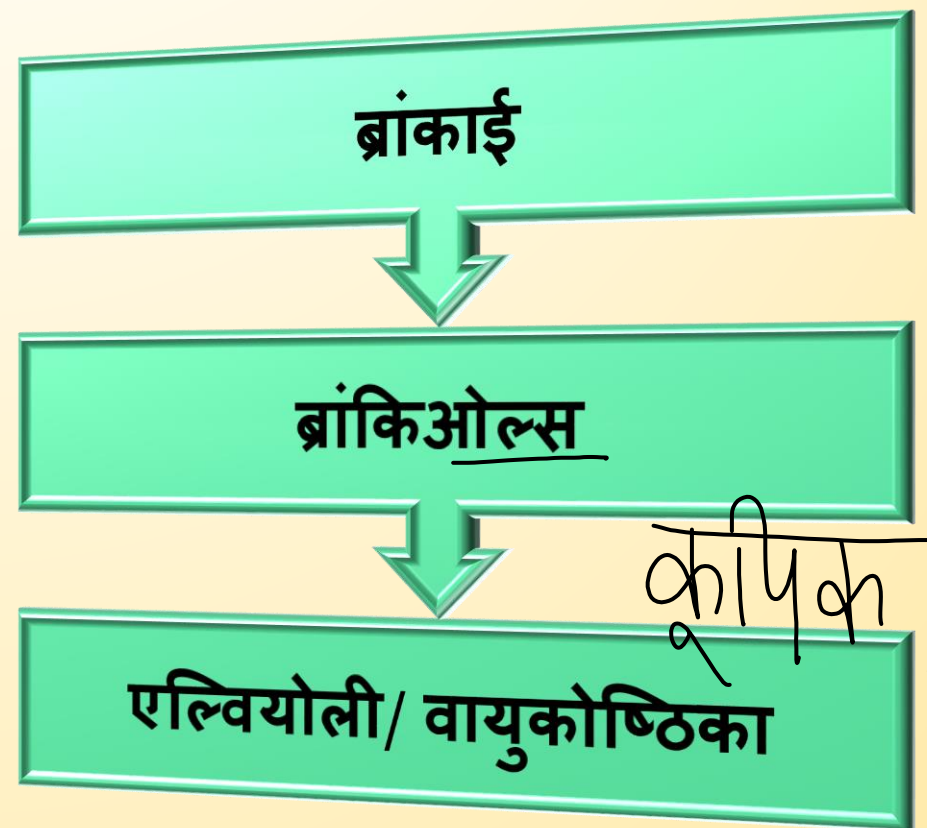
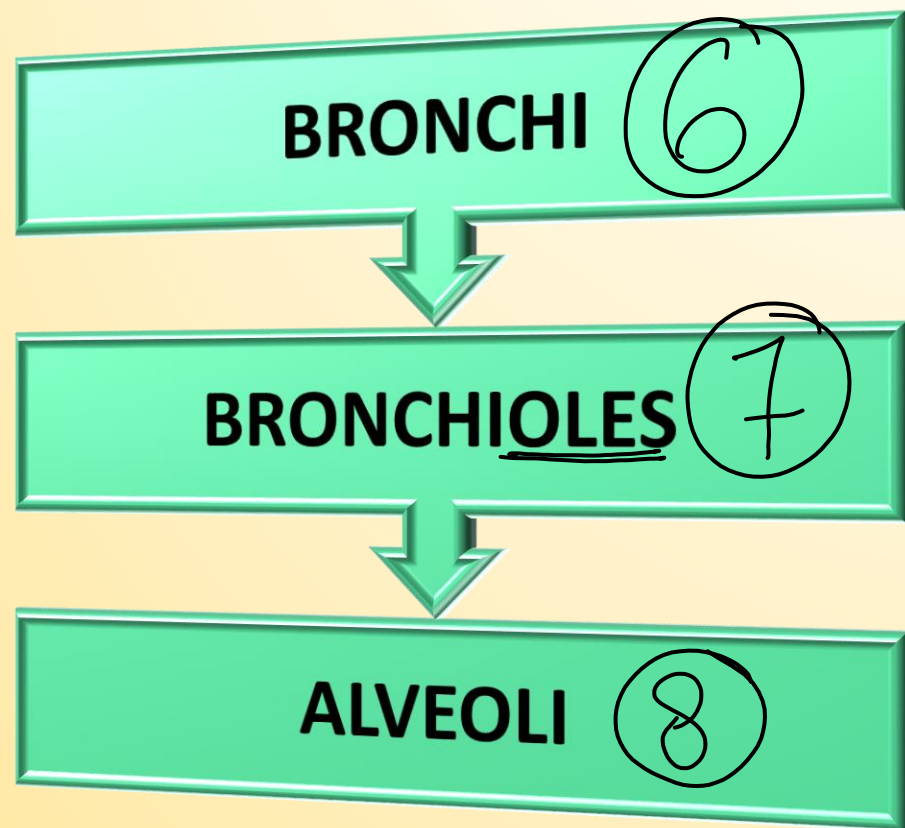


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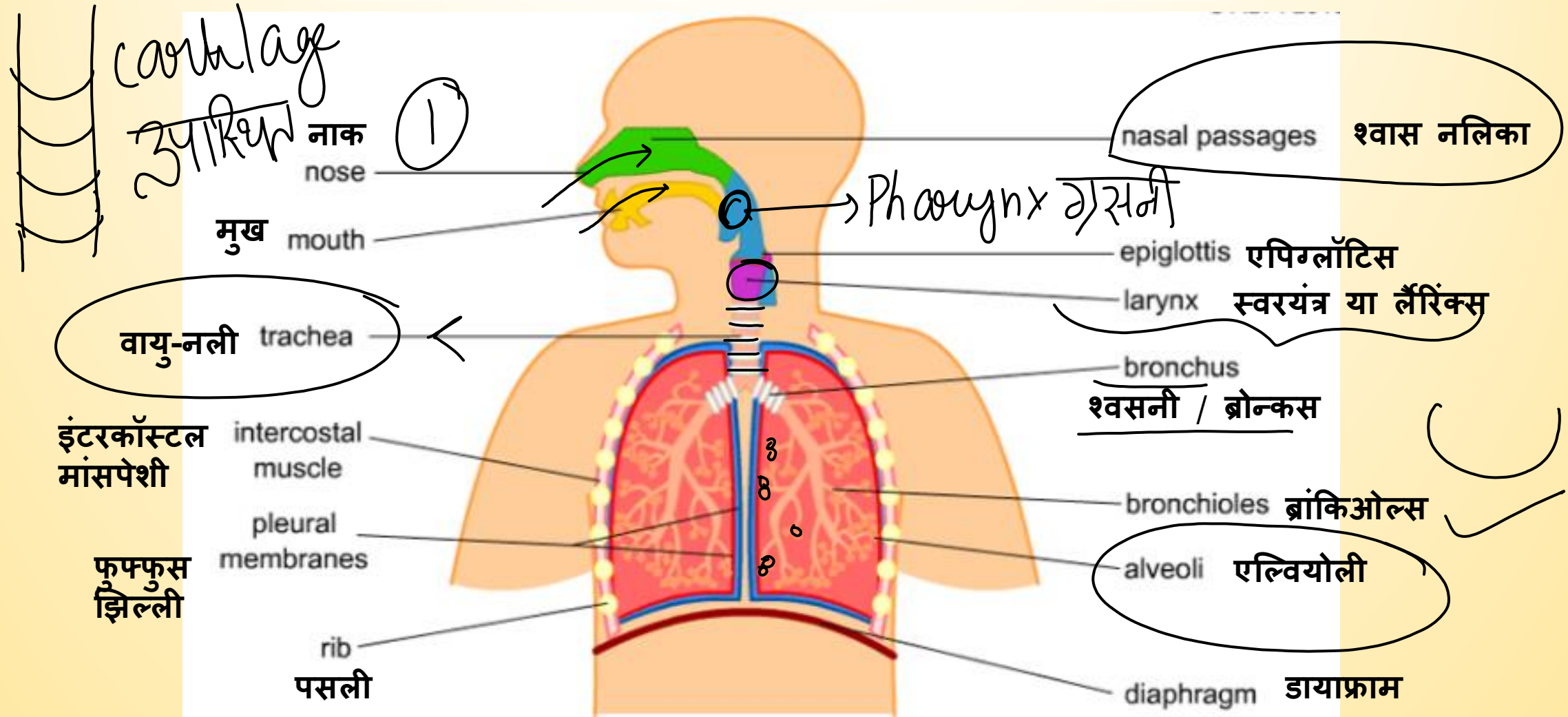
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## RESPIRATORY PATHWAY



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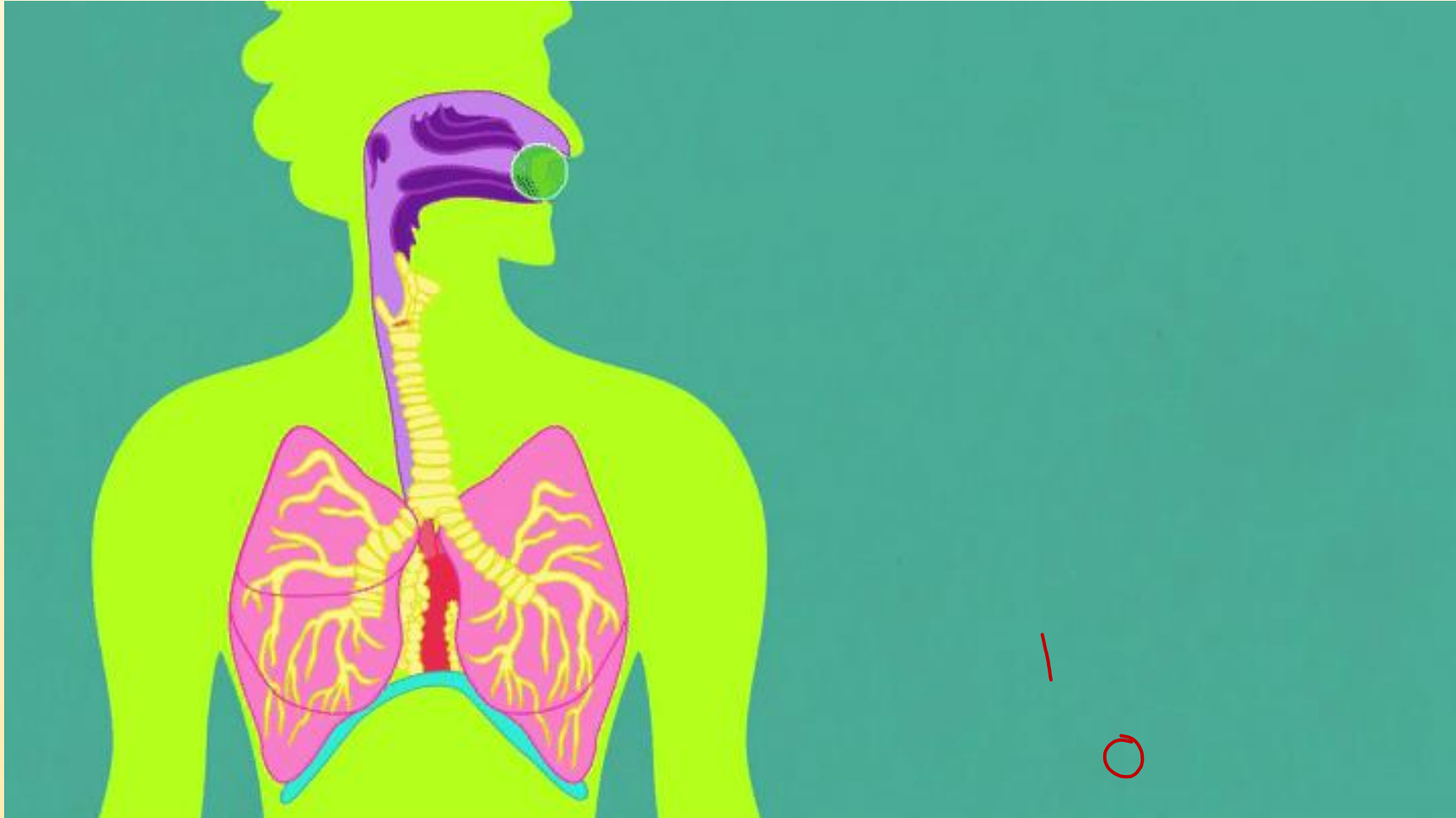
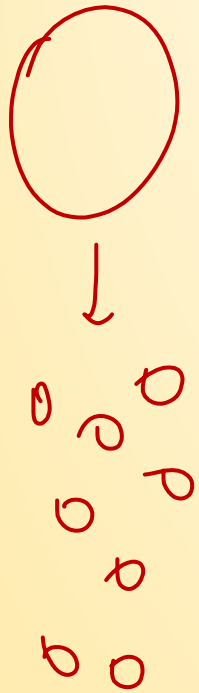




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Surface  
area

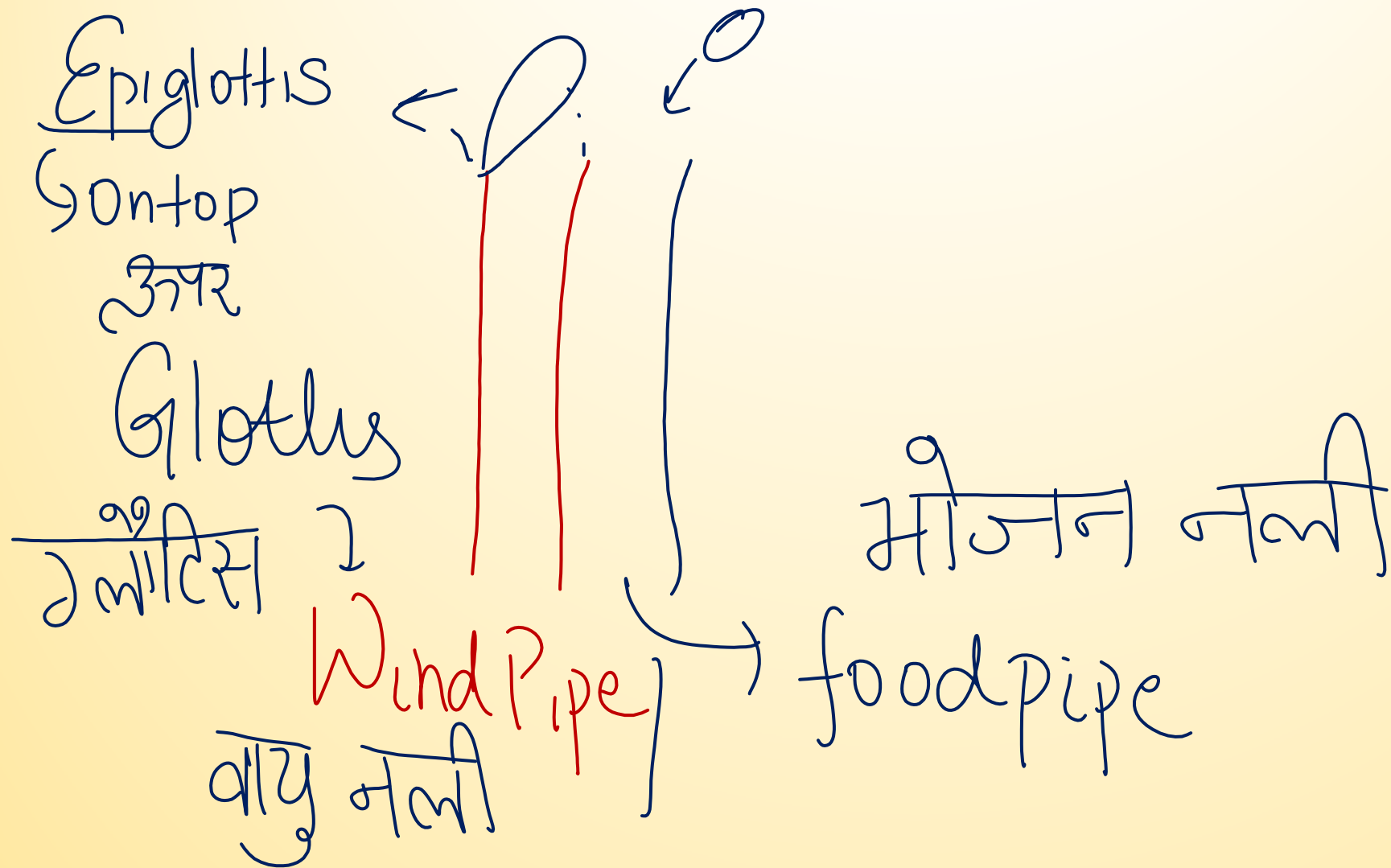
रक्त  
क्षेत्र



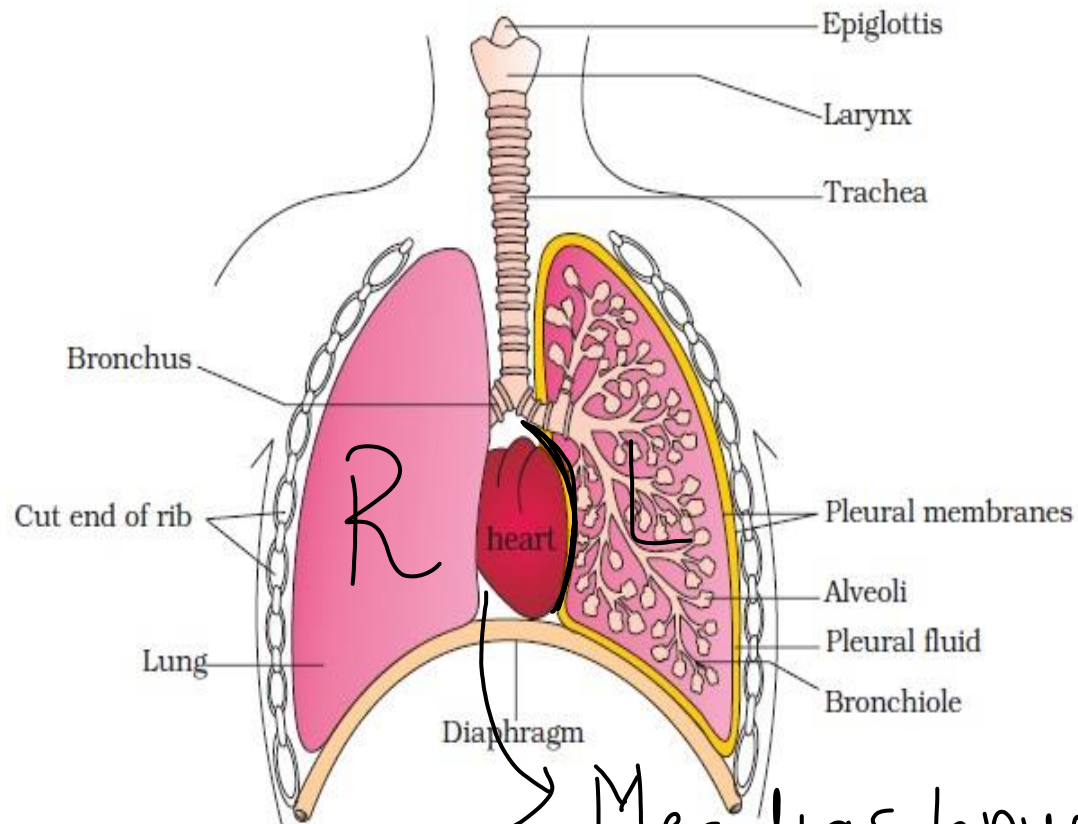
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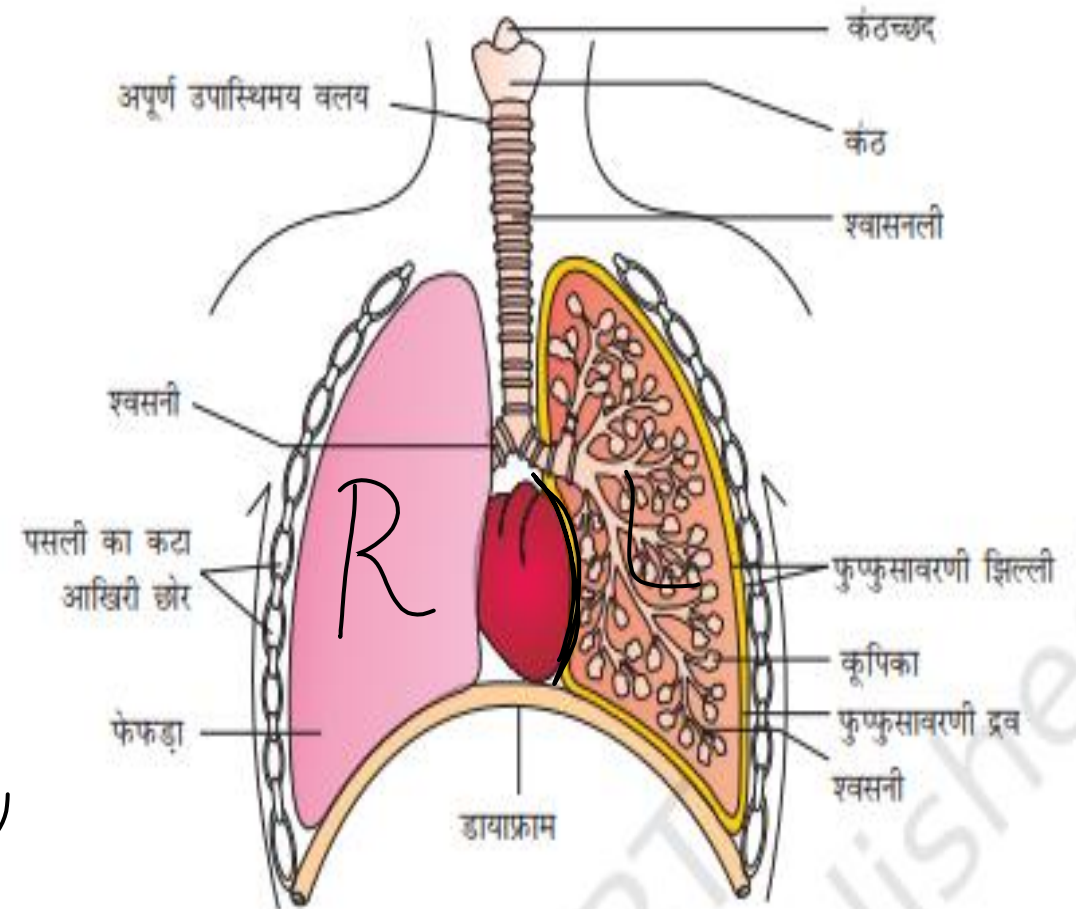
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**Figure 17.1** Diagrammatic view of human respiratory system (Sectional view of the left lung is also shown)





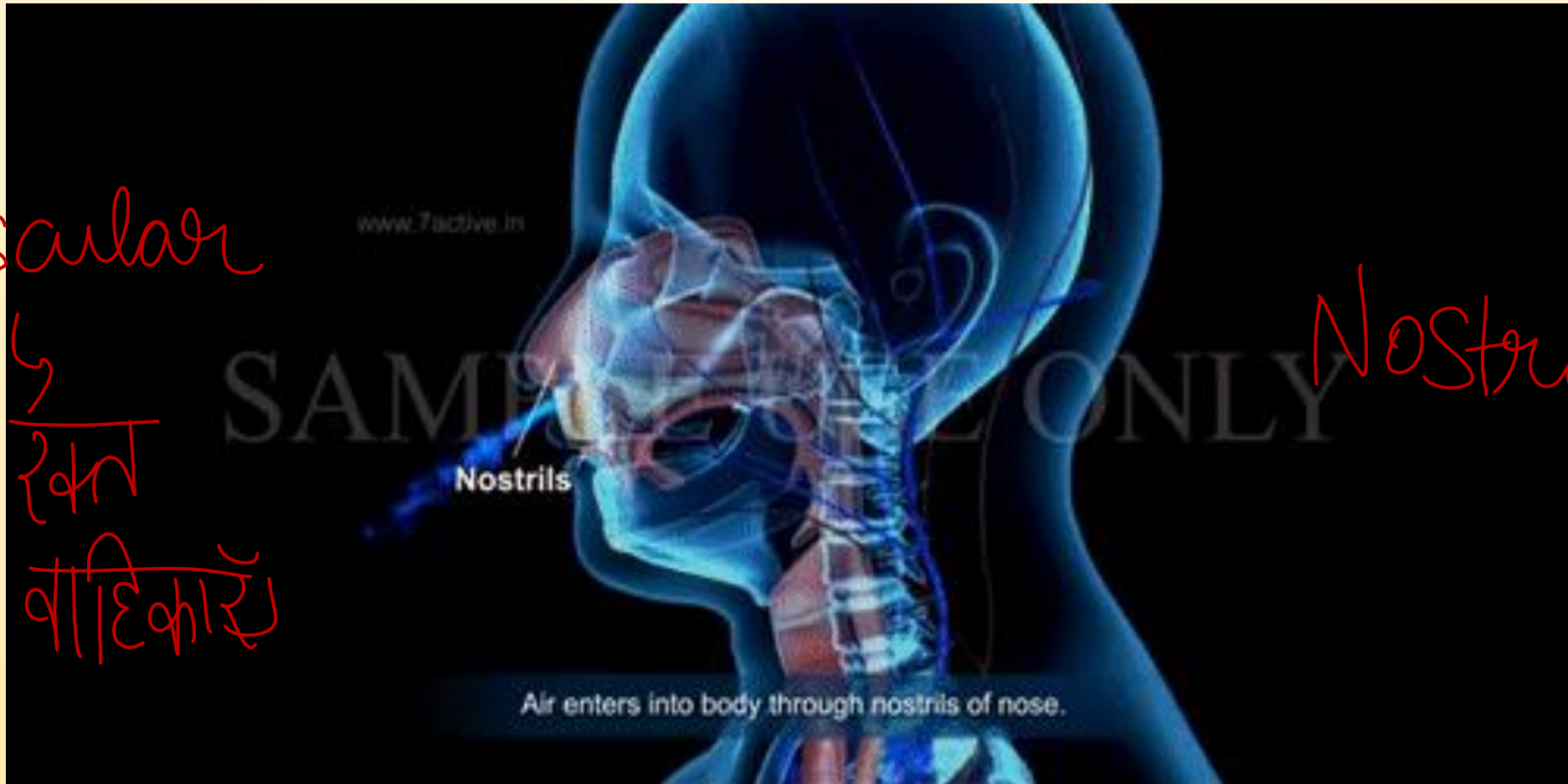


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व्यास  
रक्त  
वाहिकाएँ



Nostrils



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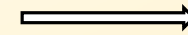
## INTRODUCTION

### FUN FACT



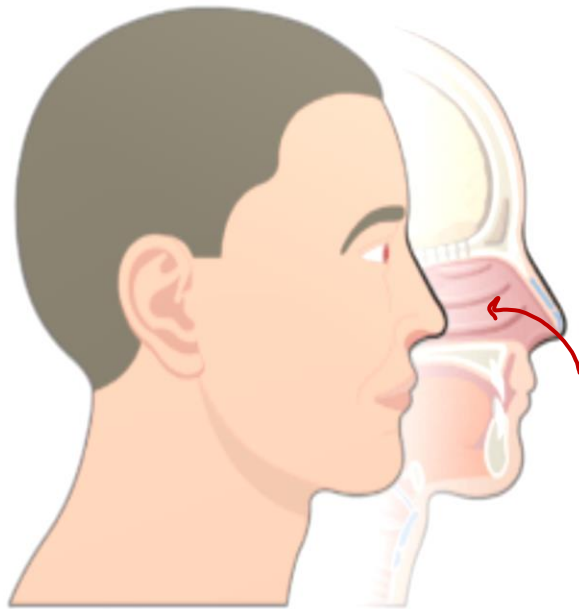
We breathe 17000-23000 times in a day.

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 कार्य:
- हवा का निस्पंदन- धूल के कण, प्रदूषक मारने के लिए
- हवा का वार्मिंग और आर्द्रीकरण- श्वसन झिल्ली के सूखने से बचाता है