

Breathing and Exchange of Gas

1. Earth worm : Cutaneous respiration

Man :

2. Trachea : Insect

Fish :

3. Heart : pericardium

Lungs :

4. Medulla : Respiratory rhythm centre

..... : Pneumotaxic centre

5. Normal heart beat : 70-72/minute

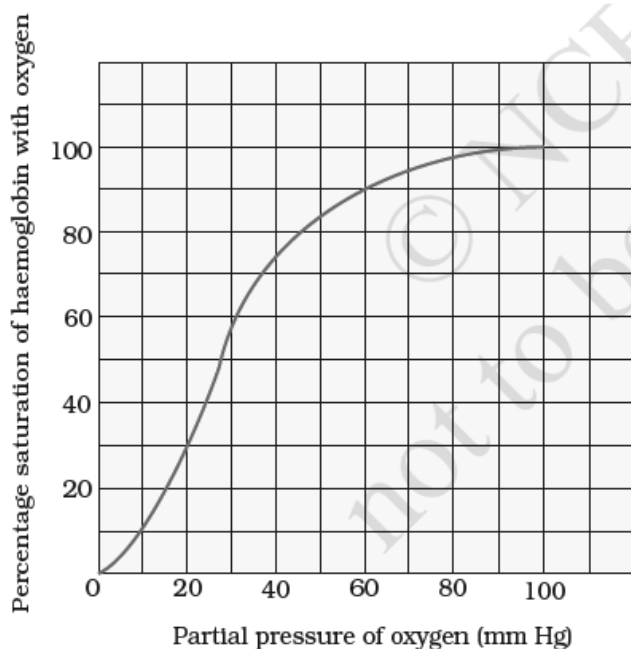
Respiratory rate :/Minute

6. Breathing involves Inspiration and expiration

Which muscles are involved in breathing?

7. What are the factors which affect the formation of carbamino haemoglobin ?

8.



a) Identify the graph ?

b) What is the normal shape of this graph?

c) At which pO_2 , 30% of Hb is saturated with oxygen ?

d) What is the significance of this graph ?

9. Oxyhaemoglobin is formed when pO_2 is high. BUT oxyhaemoglobin dissociates when the pCO_2 is high, high H^+ concentration and high temperature.

Write what happens to oxyhaemoglobin in the alveoli and body tissues

10. The volume of air involved in breathing movements can be estimated by using a

11. Write any 2 factors which affect the rate of diffusion across the alveolar membrane ?

12. Find the odd one and write the peculiar features of the other 3

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a) TV, FRC, IRV, RV

b) IC, FRC, VC, ERV

13. Arrange the following in correct order

(i) Diffusion of O_2 and CO_2 between blood and tissues.

(ii) Utilisation of O_2 by the cells for catabolic reactions and resultant release of CO_2

(iii) Diffusion of gases (O_2 and CO_2) across the alveolar membrane.

(iv) Transport of gases by the blood.

(v) Breathing or pulmonary ventilation by which atmospheric air is drawn in and CO_2 rich alveolar air is released out.

14. A person always consumes food lacking iron. What will be its consequences?

15. What is breathing/ respiration?

16. Explain how your respiration is regulated?

17. Which element is present within the Haemoglobin?

18. Which vertebrate organism respire by gills ?

19. Identify the disease

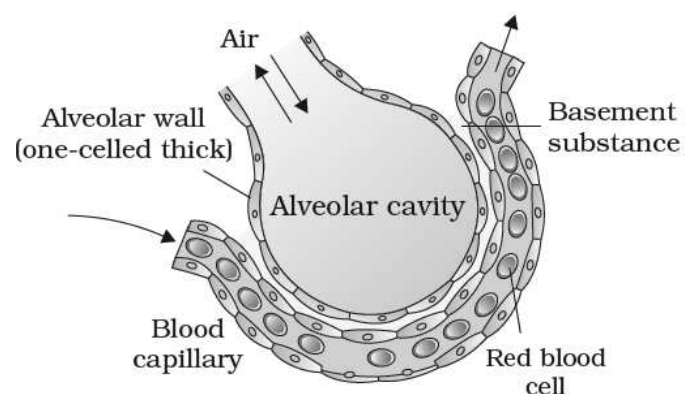
a) difficulty in breathing causing wheezing due to inflammation of bronchi and bronchioles

b) It is a chronic disorder in which alveolar walls are damaged due to which respiratory surface is decreased. One of the major causes of this is cigarette smoking.

c) In certain industries, especially those involving grinding or stone-breaking, so much dust is produced that the defense mechanism of the body cannot fully cope with the situation. Long exposure can give rise to inflammation leading to fibrosis (proliferation of fibrous tissues) and thus causing serious lung damage

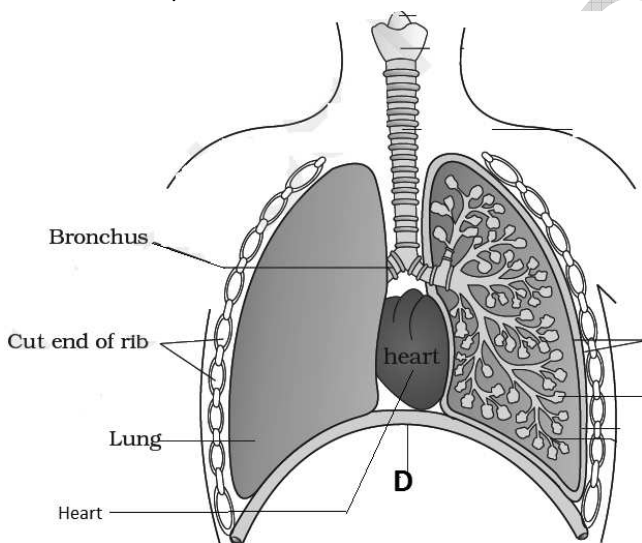
20. Which organism shows dual mode of respiration ?

21. Observe the diagram and answer the following question



Breathing and Exchange of Gas

- Name the biological process involved in the gas exchange shown in the figure?
 - How the oxygen is transported to the cells from the alveoli?
- What will happen if level of haemoglobin count decreases in your blood?
 - Explain the mechanism of CO₂ transport
 - Write one word for the following
 - The maximum volume of air a person can breathe in after a forced expiration
 - Volume of air inspired or expired during a normal respiration
 - Volume of air remaining in the lungs even after a forcible expiration
 - Total volume of air a person can inspire after a normal expiration
 - Volume of air that will remain in the lungs after a normal expiration
 - The figure shows a diagrammatic view of human respiratory system with labels A,B,C and D. select the option, which gives correct identification and main function /or characteristics



- Approximately 70% of carbon dioxide absorbed by the blood will be transported in the form of.....ions
- Choose the wrong statement
 - Solubility of CO₂ in blood is 20-25 times higher than that of oxygen
 - The total volume of air accommodated in the lung at the end of forced inspiration is called the vital capacity
 - O₂ can bind with haemoglobin in a reversible manner to form oxyhaemoglobin
 - Every 100ml of deoxygenated blood delivers approximately 4ml of CO₂ to the alveoli

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- the diffusion membrane 3 major layers namely the thin Squamous epithelium of alveoli, the endothelium of alveolar capillaries, and the basement membrane between them
- What is the function of pericardial fluid?
 - Every 100 ml of deoxygenated blood delivers approximately ml of CO₂ to the alveoli
 - Match the following and mark the correct options

Animals	Respiratory organs
A. Earthworm	i. Moist cuticle
B. Aquatic Arthropods	ii. Gills
C. Fishes	iii. Lungs
D. Birds/Reptiles	iv. Trachea

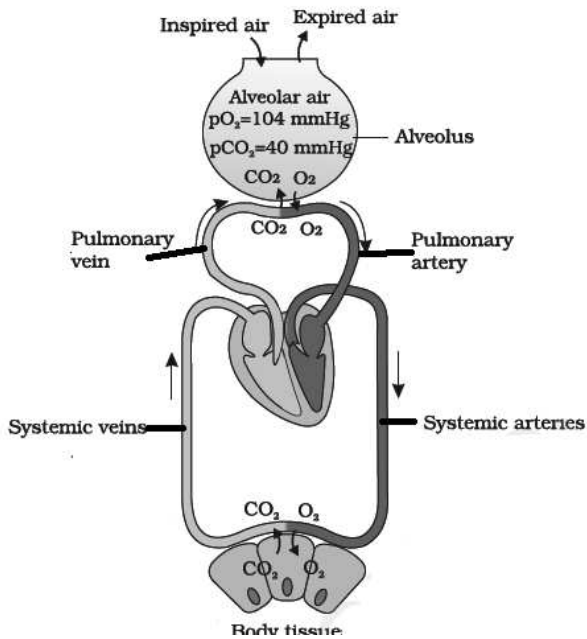
- In human Bulk of the CO₂ is transported by.....in the form of.....
- FRC= ERV+.....
 -= ERV+TV + IRV
 - IC=.....+.....
 - TLC=.....+.....
- Which epithelium covers the inner lining of alveolus?
- 97 % of oxygen is transported by RBC, Remaining 3% is transported through.....
- Where do you find the enzyme Carbonic anhydrase?
- What are the factors which affect the formation of oxyhaemoglobin?
- Every 100 ml of oxygenated blood can deliver around ml of O₂ to the tissues under normal physiological conditions
- Iron is necessary in your food, evaluate this statement?
- The part starting with the external nostrils up to the terminal bronchioles constitute the conducting part
What are the functions of conducting part?
-enzyme is present in RBC
- Injury to medulla oblongata causes stoppage of respiration, evaluate this statement?
- What is the role of medulla and Pons in regulation of respiration?
- Which biological phenomenon helps in the gas exchange across alveolar membrane and tissue?
- Normal shape of diaphragm is.....shaped
- How to prevent the following diseases

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a) Emphysema b) Occupational lung disorder

46. Which of the following is labeled Wrongly



58. What is the difference between Pulmonary artery and Pulmonary vein ?

59.

60. Which of the following artery carry high amount of oxygen

- a) Pulmonary artery b) Coronary vein
c) Coronary artery d) Pulmonary vein

47. Explain the mechanism of Oxygen transport?

48. pH of blood in veins are low (acidic) compared to blood in artery evaluate this statement?

49. Partial pressure plays an important in gas diffusion. Evaluate ?

50. Rahul told in a seminar that breathing take place based on the pressure gradient.

What will happen if the intra-pulmonary pressure is higher than the atmospheric pressure?

51. What is the partial pressure of Oxygen in the alveolar capillary? And in the oxygenated blood?

52. Surface area of alveolus is somewhat equals to $100m^2$ (area of tennis court). Evaluate this statement?

53. Cigarette smoking cause lung damage, explain ?

54. Injury to medulla will stop your respiration. Explain

55. After a forcible expiration, your lungs wont collapse. Explain?

56. Inspiration occurs when intrapulmonary pressure is.....than atmospheric pressure
(Higher, lower)

57. Fill in the blanks

Partial Pressures (in mm Hg) of Oxygen and Carbon dioxide at Different Parts Involved in Diffusion in Comparison to those in Atmosphere

Respiratory Gas	Atmospheric Air	Alveoli	Blood (Deoxygenated)	Blood (Oxygenated)	Tissues
O_2		104		95	
CO_2	0.3		45		