

CHAPTER 4

Breathing and Exchange of Gases

Mechanism of Breathing

1. Select the correct events that occur during inspiration (2020)

1. Contraction of diaphragm
 2. Contraction of external inter-costal muscles
 3. Pulmonary volume decreases
 4. Intra pulmonary pressure increases
- a. (3) and (4) b. (1), (2) and (4)
c. Only (4) d. (1) and (2)

2. Lungs do not collapse between breaths and some air always remains in the lungs which can never be expelled because: (2016 - II)

- a. There is a positive intrapleural pressure
- b. Pressure in the lungs is higher than the atmospheric pressure.
- c. There is a negative pressure in the lungs.
- d. There is a negative intrapleural pressure pulling at the lung walls

Respiratory Volumes & Capacities

3. The Total Lung Capacity (TLC) is the total volume of air accommodated in the lungs at the end of a forced inspiration. This includes: (2020-Covid)

- a. RV; ERV; IC and EC
- b. RV; ERV; VC (Vital Capacity) and FRC (Functional Residual Capacity)
- c. RV (Residual volume); ERV (Expiratory Reserve Volume); TV (Tidal Volume); and IRV (Inspiratory Reserve Volume)
- d. RV; IC (Inspiratory Capacity); EC (Expiratory Capacity); and ERV

4. Tidal Volume and Expiratory Reserve Volume of an athlete is 500 mL and 1000 mL, respectively. What will be his Expiratory Capacity if the Residual Volume is 1200 mL? (2019)

- a. 1500 mL b. 1700 mL
- c. 2200 mL d. 2700 mL

5. Match the items given Column-I with those in Column-II and select the correct option given below (2018)

Column-I		Column-II	
A.	Tidal volume	i.	2500-3000 mL
B.	Inspiratory Reserve volume	ii.	1100-1200 mL
C.	Expiratory Reserve volume	iii.	500-550 mL
D.	Residual volume	iv.	1000-1100 mL

- a. A-iii B-ii C-i D-iv
- b. A-iii B-i C-iv D-ii
- c. A-i B-iv C-ii D-iii
- d. A-iv B-iii C-ii D-i

6. Lungs are made up of air-filled sacs the alveoli. They do not collapse even after forceful expiration, because of: (2017-Delhi)

- a. Residual Volume b. Inspiratory Reserve Volume
- c. Tidal Volume d. Expiratory Reserve Volume

Exchange and Transport of Gases

7. Select the favourable conditions required for the formation of oxyhaemoglobin at the alveoli. (2021)

- a. Low pO_2 , high pCO_2 , more H^+ , higher temperature
- b. High pO_2 , high pCO_2 , less H^+ , higher temperature
- c. Low pO_2 , low pCO_2 , more H^+ , higher temperature
- d. High pO_2 , low pCO_2 , less H^+ , lower temperature

8. The partial pressures (in mm Hg) of oxygen (O_2) and carbon dioxide (CO_2) at alveoli (the site of diffusion) are: (2021)

- a. $pO_2 = 40$ and $pCO_2 = 45$ b. $pO_2 = 95$ and $pCO_2 = 40$
- c. $pO_2 = 159$ and $pCO_2 = 0.3$ d. $pO_2 = 104$ and $pCO_2 = 40$

9. Identify the wrong statement with reference to transport of oxygen. (2020)

- a. Partial pressure of CO_2 can interfere with O_2 binding with haemoglobin.
- b. Higher H^+ conc. in alveoli favours the formation of oxyhaemoglobin.
- c. Low pCO_2 in alveoli favours the formation of oxyhaemoglobin.
- d. Binding of oxygen with haemoglobin is mainly related to partial pressure of O_2 .

- ## Regulation & Disorders of Respiratory System

- | Column-I | | Column-II | |
|----------|-----------------------------------|-----------|----------------------|
| 1. | Pneumotaxic Centre | (i) | Alveoli |
| 2. | O ₂ Dissociation curve | (ii) | Pons region of brain |
| 3. | Carbonic Anhydrase | (iii) | Haemoglobin |
| 4. | Primary site of exchange of gases | (iv) | R.B.C. |

18. Asthma may be attributed to: (2016 - I)
 - a. Bacterial infection of the lungs
 - b. Allergic reaction of the mast cells in the lungs
 - c. Inflammation of the trachea
 - d. Accumulation of fluid in the lungs
19. Name the chronic respiratory disorder caused mainly by cigarette smoking: (2016 - I)
 - a. Emphysema
 - b. Asthma
 - c. Respiratory acidosis
 - d. Respiratory alkalosis
20. Name the pulmonary disease in which alveolar surface area involved in gas exchange is drastically reduced due to damage in the alveolar walls. (2015 Re)
 - a. Emphysema
 - b. Pneumonia
 - c. Asthma
 - d. Pleurisy

[illegible]