

1. Volume of air that will remain in the lungs after a normal expiration is

1. Inspiratory capacity
2. Functional residual capacity
3. Vital capacity
4. Expiratory reserve volume

2. Respiratory rhythm centre is present in the medulla and is primarily responsible for regulation of respiration as per demands of the body tissues. This centre is regulated by

1. Pneumotaxic centre present pons region
2. Central chemoreceptor adjacent to rhythm centre
3. Peripheral chemoreceptor present in aortic arch and carotid artery
4. All of these

3. Maximum volume of air a person can breathe after forceful expiration is termed as

1. Inspiratory capacity
2. Vital capacity
3. Expiratory capacity
4. Functional residual capacity

4. CO_2 generated in the tissues is carried in venous blood primarily as

1. CO_2 in plasma
2. H_2CO_3 in plasma
3. Sodium bicarbonate in plasma
4. Potassium bicarbonate in venous blood

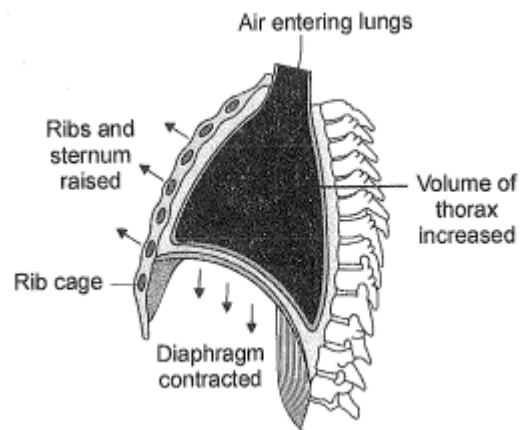
5. Under enhanced respiratory drive, the respiratory signal from which group contributes to fulfill the demand by regulating both inspiration and expiration?

1. Pneumotaxic centre
2. Dorsal respiratory group
3. Ventral respiratory group
4. Apneustic centre

6. In the haemoglobin- O_2 dissociation curves the shift of the curve towards the right could be caused by

1. Increased pH
2. Carbon monoxide (CO)
3. Strenuous exercise
4. Foetal haemoglobin

7. In the given figure, identify the muscles involved in raising the rib cage



1. External intercostals
2. Internal intercostals
3. External obliques
4. Abdominal recti

8. Dissociation of oxygen from blood to tissue is facilitated by
1. Low pO_2 at the level of tissue
 2. Metabolic activities of the tissue
 3. High pCO_2 at the level of tissue
 4. All of these
9. Select the incorrectly matched pair
- | | | |
|----|---|---------------------------|
| 1. | Additional volume of air person can expire by a forceful expiration | Expiratory reserve volume |
| 2. | Maximum amount of air expelled forcefully from lungs after maximum forceful inspiration | Vital capacity |
| 3. | Volume of air inspired and expired during a normal respiration | Tidal volume |
| 4. | When a person breathes normally, the amount of air which remains in the lungs after normal expiration | Residual volume |
10. The number of oxygen molecules (O_2) that can conjugate with one molecule of haemoglobin are
1. 2
 2. 4
 3. 8
 4. 6
11. Central chemoreceptors in the brain respond to changes in the
1. Oxygen concentration in blood
 2. Carbon dioxide concentration in CSF
 3. Oxygen concentration in CSF
 4. Rate of oxidation of food content in the cell
12. In which of the following disorders alveolar walls are damaged, surface area for gaseous exchange is reduced and the air sacs remain filled with air even after expiration?
1. Pneumonia
 2. Coryza
 3. Emphysema
 4. SARS
13. The pO_2 in systemic arteries and systemic veins is respectively
1. 95, 40 mmHg
 2. 95, 45 mmHg
 3. 40, 95 mmHg
 4. 104, 40 mmHg
14. Oxygen dissociation curve of haemoglobin will shift to right of normal curve if
1. Temperature decreases
 2. CO_2 decreases
 3. pH decreases
 4. BPG is low

15. Mark the incorrect combination w.r.t. pulmonary capacities
1. $IC = TV + IRV$
 2. $FRC = RV + ERV$
 3. $VC = TLC + RV$
 4. $EC = TV + ERV$
16. Which of the following statements are correct w.r.t. transportation of gases?
- A. Blood transport CO_2 comparatively easily because of its higher solubility
 - B. CO_2 diffuses into blood, passes into RBCs and reacts with water to form H_2CO_3
 - C. 20-25 percent CO_2 is carried by haemoglobin as carbamino-haemoglobin
 - D. Oxyhaemoglobin of erythrocytes is basic in nature and it increases pH of blood
1. A only
 2. A & B only
 3. A, B & C only
 4. A, B, C & D
17. Total volume of air a person can expire after a normal inspiration is
- | | |
|------------------------|---------------|
| A. Tidal volume | B. $TV + ERV$ |
| C. Expiratory capacity | D. $ERV + RV$ |
1. A only
 2. B & C only
 3. A, B & C only
 4. A,B,C & D
18. The maximum volume of air a person can breathe in after a forced expiration includes
1. ERV (Expiratory Reserve volume)
 2. TV (Tidal Volume)
 3. IRV (Inspiratory Reserve Volume)
 4. All of these
19. Difficulty in breathing causing wheezing is due to
1. Emphysema
 2. Asthma
 3. Tuberculosis
 4. Atelectasis
20. Which of the following statements is not correct?
1. Volume of air that will remain in the lungs after a normal expiration is about 2200 ml
 2. Partial pressure of O_2 and CO_2 in alveoli is 40 mm Hg and 104 mm Hg respectively
 3. Alveoli of lungs are lined by thin squamous epithelium
 4. High amount of carbonic anhydrase is found in RBCs
21. On an average, a healthy human breathes
1. 12-16 times/min
 2. 70-80 times/min
 3. 80-120 times/min
 4. 3-5 times/min

22. The movement of air into the lungs occurs due to a pressure gradient between the lungs and the atmosphere. So, inspiration occurs when/due to
1. Intra pulmonary is less than the atmospheric pressure
 2. Increase in the volume of the thoracic chamber in the dorso-ventral axis
 3. Contraction of external inter-costal muscles and phrenic muscles
 4. All of these
23. The diffusion membrane or respiratory membrane does not include
1. Thin squamous epithelium
 2. Pseudostratified ciliated epithelium
 3. Endothelium
 4. Basement membrane
24. Human beings have a significant ability to maintain and moderate the respiratory rhythm. This is done by neural control. Which of the following is not related with respiration ?
1. Pneumotaxic centre
 2. Respiratory rhythm centre
 3. Hypothalamus
 4. Aortic and carotid body receptors
25. During inspiration, the diaphragm
1. Contracts
 2. Expands
 3. Does not move
 4. Relaxes
26. A healthy man can inspire or expire approximately _____ of air per breath normally
1. 500 ml
 2. 1000 ml to 1100 ml
 3. 1100 ml to 1200 ml
 4. 6000 ml to 8000 ml
27. Total volume of air accommodated in the lungs at the end of maximum forceful inspiration includes
- A. ERV + RV
 - B. IRV + ERV
 - C. TV + IRV + ERV + RV
 - D. VC + RV
1. A only
 2. A & B only
 3. C only
 4. C & D only
28. What percentage of haemoglobin is saturated with oxygen in the blood at pO_2 30 mm Hg and pCO_2 40 mm Hg ?
1. 50 %
 2. 85 %
 3. 90 %
 4. 98 %
29. Conducting part of the respiratory system extends from
1. Trachea to bronchi
 2. External nostrils to trachea
 3. External nostrils to terminal bronchioles
 4. External nostrils to alveolar ducts

30. Which of the following statements is correct regarding CO₂ and O₂ transport in blood ?
1. 100 ml of oxygenated blood carries 53 ml of O₂
 2. 100 ml of blood always transport equal amounts of O₂ and CO₂
 3. 100 ml of oxygenated blood delivers more O₂ than CO₂ to the tissues
 4. O₂ and CO₂ are both maximally transported through the blood plasma

31. Given below are the partial pressures (in mmHg) of oxygen and carbondioxide at different parts involved in diffusion in comparison to those in atmosphere.

Resp-iratory gas	Atmo-spheric air	Alveoli	Body (deoxy-genated)	Blood (Oxy-genated)
O ₂	159	B	40	D
CO ₂	A	40	C	40

Choose the correct option w.r.t. the values of partial pressures (in mmHg) marked as A, B, C and D

	A	B	C	D
1.	0.3	104	40	52
2.	32	116	45	45
3.	0.3	104	45	95
4.	32	116	45	95

32. At 40 mmHg of partial pressure of oxygen haemoglobin is _____ saturated

1. 50 %
2. 75 %
3. 85 %
4. 35 %

33. Trachea divides into right and left primary bronchi at the level of

1. 2nd thoracic vertebrae
2. 5th thoracic vertebrae
3. 7th thoracic vertebrae
4. 10th thoracic vertebrae

Tissues

34. Carbon dioxide generated in the tissue is carried in venous blood primarily as

1. Dissolved gas in plasma
2. Carbamino hemoglobin
3. Sodium bicarbonate in venous blood
4. Potassium bicarbonate in venous blood

35.

Given below are four statements A-D each with one or two blanks. Select the option which correctly fills up the blanks in two statements.

A. Healthy man can inspire or expire approximately (i) ml of air per minute.

B. Inspiratory reserve volume average (i) ml.

C. Residual volume averages (i) ml.

D. Volume of air accumulated in the lungs at the end of forced inspiration is (i).

Options :

1. A - (i) 500 ml,

B - (i) 2500 to 3000 ml

2. B - (i) 2500 to 3000 ml,

C - (i) 1000 ml to 1100 ml

3. C - (i) 1000 ml to 1100 ml

D - (i) Vital capacity

4. A - (i) 6000 to 8000 ml

D - (i) Vital capacity + residual volume

36.

Which of the following statement is incorrect w.r.t. transport of carbon dioxide in blood?

1. About 20-25 percent of carbon dioxide is carried by haemoglobin in the form of carbamino haemoglobin

2. 70 percent of CO₂ is carried in a dissolved states through plasma

3. As the blood picks up carbon dioxide from tissue, HCO₃⁻ accumulates inside RBCs of which some move out into the blood plasma and in exchange chloride ions move from plasma into RBCs

4. The greatest percentage of carbon dioxide is transported in blood plasma as bicarbonate ions

37.

How much carbon dioxide is delivered by 5 L of deoxygenated blood to the alveoli?

1. 200 ml

2. 400 ml

3. 100 ml

4. 300 ml

38.

The most important primary factor in determining the percent saturation of haemoglobin with oxygen is

1. Partial pressure of oxygen

2. Acidity

3. Partial pressure of carbon dioxide

4. Temperature

39.

How many of the following statements are correct?

a. Normal exhalation during quiet breathing in an active process involving intensive muscle contraction.

b. Air flow during breathing is due to pressure gradient between the lungs and atmospheric air.

c. A specialised centre present in the medulla region of the brain called respiratory rhythm centre is primarily responsible for regulation of respiration,

d. Respiratory rate decreases during fever.

1. One

2. Two

3. Three

4. Four

40.

Vital capacity (VC) can be stated as

1. TV + IRV

2. TV + FRC

3. IRV + FRC

4. IC + ERV

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