

## Exercise - I (Conceptual Questions)

## Build Up Your Understanding

1. The function of tracheal cilia is to  
 (1) Pass mucus out (2) Pass mucus in  
 (3) Pass air out (4) Pass air in

**BBG001**

2. Which of the following prevents collapsing of trachea?  
 (1) Muscles (2) Diaphragm  
 (3) Ribs (4) Cartilaginous rings

**BBG002**

3. Tracheal rings are :—  
 (1) Complete  
 (2) Incomplete  
 (3) Dorsally incomplete  
 (4) Lateral incomplete

**BBG004**

4. Inflammation of the lung covering causing severe chest pain is  
 (1) Emphysema (2) Pleurisy  
 (3) Asphyxia (4) Hypoxia

**BBG008**

5. Which of the following is not a part of respiratory tract?  
 (1) Nasal chamber (2) Oesophagus  
 (3) Pharynx (4) Trachea

**BBG009**

6. The epithelium of respiratory bronchioles is:-  
 (1) Pseudostratified columnar  
 (2) Simple squamous  
 (3) Pseudostratified and sensory  
 (4) Cuboidal and columnar

**BBG011**

7. Lungs are covered by  
 (1) Perichondrium (2) Pleural sac  
 (3) Pericardium (4) Peristomium

**BBG014**

8. Which one of the following statement is correct?  
 (1) Chest expands because air enters into the lungs  
 (2) Air enters into the lungs because chest expands  
 (3) The muscles of the diaphragm contracts because air enters into the lungs  
 (4) All of the above statements are correct

**BBG015**

9. After deep inspiration, capacity of maximum expiration of lung is called :-  
 (1) Total lung capacity  
 (2) Functional residual capacity  
 (3) Vital capacity  
 (4) Inspiratory capacity

**BBG016**

10. Which statement is correct ?  
 (1) Pulmonary ventilation is equal to alveolar ventilation.  
 (2) Pulmonary ventilation is less than alveolar ventilation.  
 (3) Alveolar ventilation is more than Pulmonary ventilation.  
 (4) Alveolar ventilation is less than Pulmonary ventilation.

**BBG017**

11. About 1500 ml of air left in lungs is called  
 (1) Tidal volume  
 (2) Inspiratory reserve volume  
 (3) Residual volume  
 (4) Vital capacity

**BBG018**

- 12.** At high altitude, RBC of human blood will  
 (1) Increase in number  
 (2) Decrease in number  
 (3) Decrease in size  
 (4) Increase in size  
**BBG019**
- 13.** Which one has the lowest value?  
 (1) Tidal volume  
 (2) Vital capacity  
 (3) Inspiratory reserve volume  
 (4) Expiratory reserve volume  
**BBG020**
- 14.** Volume of air inspired or expired with each normal breath is known as -  
 (1) Inspiratory capacity  
 (2) Total lung capacity  
 (3) Tidal volume  
 (4) Residual volume  
**BBG021**
- 15.** Total lung capacity is :-  
 (1) Total volume of air accommodated in lungs at the end of forced inspiration  
 (2)  $RV + ERV + TV + IRV$   
 (3) Vital capacity + Residual volume  
 (4) All of the above  
**BBG025**
- 16.** Which instrument helps in clinical assessment of pulmonary volumes?  
 (1) Sphygmomanometer  
 (2) Stethoscope  
 (3) Spirometer  
 (4) Electrocardiograph  
**BBG026**
- 17.** Volume of air remains in the lungs after normal expiration is  
 (1)  $ERV + RV$  (2)  $IRV + RV$   
 (3)  $RV + IRV + ERV$  (4)  $TV$   
**BBG027**
- 18.** Which of the following volume is not included in vital capacity?  
 (1)  $ERV$  (2)  $TV$  (3)  $IRV$  (4)  $RV$   
**BBG028**
- 19.** The upper region of pharynx in human is called :-  
 (1) Oropharynx (2) Nasopharynx  
 (3) Laryngopharynx (4) None of these  
**BBG029**
- 20.** Friction on the lungs surface reduces by  
 (1) double layered pleura  
 (2) single layered pleura  
 (3) ribs covering lungs  
 (4) mucous membrane surrounding the lungs.  
**BBG032**
- 21.** In lungs, air is separated from venous blood by:  
 (1) Squamous epithelium + tunica externa of blood vessel  
 (2) Squamous epithelium + endothelium of blood vessel  
 (3) Transitional epithelium + tunica media of blood vessel  
 (4) Columnar epithelium + 3 layered wall of blood vessel.  
**BBG033**
- 22.** In lung, gaseous exchange is done by :-  
 (1) Simple diffusion  
 (2) Active transport  
 (3) Passive transport  
 (4) Facilitated diffusion  
**BBG034**
- 23.** Which of the following statements is **not true**?  
 (1) The partial pressure of  $O_2$  in deoxygenated blood is 40 mm Hg.  
 (2) The partial pressure of  $O_2$  in oxygenated blood is 95 mm Hg.  
 (3) The partial pressure of  $O_2$  in alveolar air is 104 mm Hg.  
 (4) The partial pressure of  $CO_2$  in alveolar air is 45 mm Hg.  
**BBG035**

24. Partial pressure of oxygen in alveoli, atmospheric air and tissue will be  
 (1) 40, 159, 45  
 (2) 40, 0.3, 45  
 (3) 104, 159, 40  
 (4) 104, 0.3, 45

BBG036

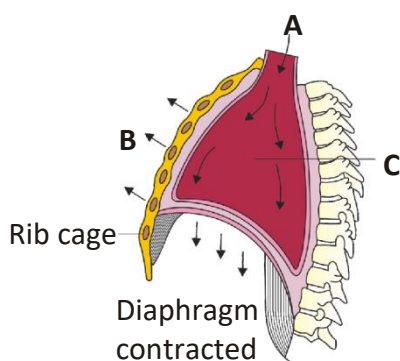
25. What will be the  $pO_2$  and  $pCO_2$  in the atmospheric air compared to those in the alveolar air?  
 (1)  $pO_2$  lesser,  $pCO_2$  higher  
 (2)  $pO_2$  higher,  $pCO_2$  lesser  
 (3)  $pO_2$  higher,  $pCO_2$  higher  
 (4)  $pO_2$  lesser,  $pCO_2$  lesser

BBG037

26. Partial pressure of  $CO_2$  is higher :-  
 (1) At alveolar level  
 (2) At tissue level  
 (3) In atmosphere  
 (4) In oxygenated blood

BBG038

27. In the given diagram, identify what is depicted by A, B and C.  
 Choose the correct option.



- (1) A-Air going out from lungs, B-Ribs and sternum relaxed, C-volume of thorax increased  
 (2) A-Air entering lungs, B-Ribs and sternum relaxed, C-volume of thorax increased

- (3) A-Air entering lungs, B-Ribs and sternum raised, C-volume of thorax increased  
 (4) A -Air going out from lungs, B-Ribs and sternum relaxed, C-volume of thorax decreased

BBG039

28. Almost same  $pO_2$  in humans is found in  
 (1) alveoli and tissues  
 (2) oxygenated blood and deoxygenated blood  
 (3) alveoli and oxygenated blood  
 (4) alveoli and deoxygenated blood

BBG040

29. Arrange the following in the order if increasing volume  
 (i) Tidal volume  
 (ii) Residual volume  
 (iii) Expiratory reserve volume  
 (iv) Vital capacity  
 (1) (i) < (ii) < (iii) < (iv)  
 (2) (i) < (iii) < (ii) < (iv)  
 (3) (i) < (iv) < (iii) < (ii)  
 (4) (i) < (iv) < (ii) < (iii)

BBG042

30. Under normal condition 100 ml blood deliver \_\_\_\_\_ to tissue.  
 (1) 4 ml  $O_2$   
 (2) 10 ml  $O_2$   
 (3) 5 ml  $O_2$   
 (4) 25 ml  $O_2$

BBG043

31. Effect of  $CO_2$  concentration on dissociation of oxyhaemoglobin is called:  
 (1) Bohr's effect  
 (2) Haldane effect  
 (3) Hamburger effect  
 (4) Root effect

BBG046

32. Chloride shift occurs for the transport of:  
 (1)  $O_2$  (2)  $CO_2$  (3) CO (4)  $O_3$

BBG047

- 33.** Exchange of bicarbonates and chloride ions between RBC and plasma is called:-  
 (1) Chloride shift.  
 (2) Bohr's effect.  
 (3) Haldane's effect.  
 (4) Intra cellular respiration.  
**BBG048**
- 34.** Determination of oxygen carried by haemoglobin is done by  
 (1) pH  
 (2) Partial pressure of oxygen  
 (3) Partial pressure of carbon dioxide  
 (4) All the above  
**BBG049**
- 35.** For proper transport of  $O_2$  and  $CO_2$ , blood should be  
 (1) Slightly acidic  
 (2) Strongly acidic  
 (3) Strongly alkaline  
 (4) Slightly alkaline  
**BBG050**
- 36.** What would happen when blood is acidic?  
 (1) Binding of oxygen with haemoglobin increases  
 (2) Red blood corpuscles are formed in higher number  
 (3) Binding of oxygen with haemoglobin decreases  
 (4) There is no change in oxygen binding nor number of RBC  
**BBG051**
- 37.** The chloride shift is movement of  $Cl^-$   
 (1) From plasma to RBC  
 (2) From WBC to plasma  
 (3) From RBC to plasma  
 (4) From plasma to WBC  
**BBG052**
- 38.** Chloride shift occurs in respond to :  
 (1)  $H^+$  (2)  $K^+$  (3)  $HCO_3^-$  (4)  $Na^+$   
**BBG053**
- 39.** What happen to the  $O_2$  dissociation curve of Hb if pH is decreased ?  
 (1) shift to left  
 (2) shift to right  
 (3) remain unchanged  
 (4) will oscillate erratically  
**BBG054**
- 40.** Dissociation curve shifts to the right when:-  
 (1)  $CO_2$  concentration decreases  
 (2)  $CO_2$  concentration increases  
 (3)  $O_2$  concentration increases  
 (4)  $H^+$  concentration decreases  
**BBG055**
- 41.** Oxyhaemoglobin acts as  
 (1) Alkali (2) Acid  
 (3) Neutral (4) Buffer  
**BBG056**
- 42.** The oxygen dissociation curve will show a right shift in case of :-  
 (1) Less  $H^+$  concentration  
 (2) High partial pressure of  $O_2$   
 (3) Low partial pressure of  $CO_2$   
 (4) High temperature.  
**BBG057**
- 43.** Which of the following conditions are found in the alveoli of lungs :  
 I. High  $pO_2$  II. Low  $pCO_2$   
 III. High  $pCO_2$  IV. Low  $pO_2$   
 V. Low  $H^+$  VI. High  $H^+$   
 Choose the **correct** option.  
 (1) I, III and V  
 (2) III, IV and VI  
 (3) I, IV and VI  
 (4) I, II and V  
**BBG058**

- 44.** Binding of  $\text{CO}_2$  to oxyhaemoglobin occurs when :  
 (1)  $\text{pCO}_2$  is high and  $\text{pO}_2$  is less in tissue  
 (2)  $\text{pCO}_2$  is low and  $\text{pO}_2$  is high in tissue  
 (3)  $\text{pCO}_2$  is low and  $\text{pO}_2$  is low in tissue  
 (4)  $\text{pCO}_2$  is high and  $\text{pO}_2$  is high in tissue  
**BBG059**
- 45.** In Bohr's effect, curve shift to right when :-  
 (1)  $\text{pCO}_2$  decreases and  $\text{p50 O}_2$  increases  
 (2)  $\text{pCO}_2$  increases and  $\text{p50 O}_2$  decreases  
 (3)  $\text{pCO}_2$  increases and  $\text{p50 O}_2$  increases  
 (4)  $\text{pCO}_2$  increases and  $\text{p50 O}_2$  decreases and pH increases  
**BBG060**
- 46.** In which three forms  $\text{CO}_2$  is transported by blood?  
 (1) As a solution, Carbamino compounds, bicarbonates  
 (2) As a solution, Carbamino proteins,  $\text{KHCO}_3$   
 (3) As a solution, Carbamino haemoglobin,  $\text{NaHCO}_3$   
 (4) As a solution, Carbamino compound,  $\text{H}_2\text{CO}_3$   
**BBG061**
- 47.** H. Hb is :-  
 (1)  $\text{H}_2\text{b}$   
 (2) Heavy hydrogen bond  
 (3) Reduced bromide  
 (4) Haemoglobin acid  
**BBG062**
- 48.** During transport of  $\text{CO}_2$ , blood does not become acidic due to :  
 (1) Neutralisation of  $\text{H}_2\text{CO}_3$  by  $\text{Na}_2\text{CO}_3$   
 (2) Absorption by leucocytes  
 (3) Blood buffers  
 (4) Non-accumulation  
**BBG064**
- 49.** Rate of respiration is directly affected by  
 (1)  $\text{CO}_2$  concentration  
 (2)  $\text{O}_2$  in trachea  
 (3) Concentration of  $\text{O}_2$   
 (4) Diaphragm expansion  
**BBG066**
- 50.** CO is more toxic than  $\text{CO}_2$  because it :  
 (1) Damages lungs  
 (2) It destroys haemoglobin  
 (3) Affects the nervous system  
 (4) Reduces the oxygen carrying capacity of haemoglobin  
**BBG067**
- 51.** Carbon monoxide has greater affinity for haemoglobin as compare to oxygen :-  
 (1) 1000 Times (2) 200 Times  
 (3) 20 Times (4) 2 Times  
**BBG068**
- 52.** About 97% of oxygen is transported by RBC remaining 3% is :-  
 (1) Dissolved in plasma & transported  
 (2) Retained in lungs  
 (3) Attached to cell membranes  
 (4) Found inside mitochondria  
**BBG069**
- 53.** Increased asthmatic attacks in certain seasons are related to :-  
 (1) Hot and humid environment  
 (2) Eating fruits preserved in tin containers  
 (3) Inhalation of seasonal pollen  
 (4) Low temperature  
**BBG070**
- 54.** Disease aggravated by pollution is :-  
 (1) Haemophilia (2) Rheumatism  
 (3) Scurvy (4) Bronchitis  
**BBG071**

## Breathing and Exchange of Gases

55. Column-I represents diseases and column II represents their symptoms. Which of the following pairs are correct match for them:-

| Column-I             | Column-II                               |
|----------------------|-----------------------------------------|
| (P) Asthma           | (i) Damaged alveolar walls              |
| (Q) Emphysema        | (ii) Accumulation of W.B.C. in alveolus |
| (R) Pneumonia        | (iii) Allergy                           |
| (1) P-iii, Q-ii, R-i | (2) P-iii, Q-i, R-ii                    |
| (3) P-ii, Q-iii, R-i | (4) P-ii, Q-i, R-iii                    |

**BBG072**

### EXERCISE-I (Conceptual Questions)

### ANSWER KEY

| Question | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Answer   | 1  | 4  | 3  | 2  | 2  | 2  | 2  | 2  | 3  | 4  | 3  | 1  | 1  | 3  | 4  |
| Question | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| Answer   | 3  | 1  | 4  | 2  | 1  | 2  | 1  | 4  | 3  | 2  | 2  | 3  | 3  | 2  | 3  |
| Question | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| Answer   | 1  | 2  | 1  | 4  | 4  | 3  | 1  | 3  | 2  | 2  | 2  | 4  | 4  | 1  | 3  |
| Question | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 |    |    |    |    |    |
| Answer   | 3  | 4  | 3  | 1  | 4  | 2  | 1  | 3  | 4  | 2  |    |    |    |    |    |

**Exercise - II (Previous Year Questions)**

**AIPMT/NEET**

**AIPMT 2014**

1. Approximately seventy percent of carbon-dioxide absorbed by the blood will be transported to the lungs:
- (1) as bicarbonate ions
  - (2) in the form of dissolved gas molecules
  - (3) by binding to R.B.C.
  - (4) as carbamino - haemoglobin

**BBG087**

**AIPMT 2015**

2. When you hold your breath, which of the following gas changes in blood would first lead to the urge to breathe?
- (1) rising CO<sub>2</sub> concentration
  - (2) falling CO<sub>2</sub> concentration
  - (3) rising CO<sub>2</sub> and falling O<sub>2</sub> concentration
  - (4) falling O<sub>2</sub> concentration

**BBG088**

**NEET-I 2016**

3. Asthma may be attributed to :
- (1) bacterial infection of the lungs
  - (2) allergic reaction of the mast cells in the lungs
  - (3) inflammation of the trachea
  - (4) accumulation of fluid in the lungs

**BBG089**

**NEET-II 2016**

4. The partial pressure of oxygen in the alveoli of the lungs is :-
- (1) Less than that in the blood
  - (2) Less than that of carbon dioxide
  - (3) Equal to that in the blood
  - (4) More than that in the blood

**BBG090**

5. Lungs do not collapse between breaths and some air always remains in the lungs which can never be expelled because :-
- (1) There is a positive intrapleural pressure
  - (2) Pressure in the lungs is higher than the atmospheric pressure.
  - (3) There is a negative pressure in the lungs.
  - (4) There is a negative intrapleural pressure pulling at the lung walls

**BBG091**

**NEET (UG) 2017**

6. Lungs are made up of air-filled sacs, the alveoli. They do not collapse even after forceful expiration, because of:
- (1) Inspiratory Reserve Volume
  - (2) Tidal Volume
  - (3) Expiratory Reserve Volume
  - (4) Residual Volume

**BBG092**

**NEET(UG) 2018**

7. Which of the following options correctly represents the lung conditions in asthma and emphysema, respectively ?
- (1) Inflammation of bronchioles;  
Decreased respiratory surface
  - (2) Increased number of bronchioles;  
Increased respiratory surface
  - (3) Increased respiratory surface;  
Inflammation of bronchioles
  - (4) Decreased respiratory surface;  
Inflammation of bronchioles

**BBG093**

8. Match the items given Column I with those in Column II and select the **correct** option given below :

| 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   | b   | c  | d   |
|-----|-----|-----|----|-----|
| (1) | iii | ii  | i  | iv  |
| (2) | iii | i   | iv | ii  |
| (3) | iii | iv  | ii | iii |
| (4) | iv  | iii | ii | i   |

BBG094

9. Which of the following is an occupational respiratory disorder ?

- (1) Anthracis
- (2) Silicosis
- (3) Botulism
- (4) Emphysema

BBG095

## NEET (UG) 2019

10. 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?
- (1) 1500 mL
  - (2) 1700 mL
  - (3) 2200 mL
  - (4) 2700 mL

BBG096

## NEET (UG) 2019 (ODISHA)

11. Select the correct statement.
- (1) Expiration occurs due to external intercostal muscles
  - (2) Intrapulmonary pressure is lower than the atmospheric pressure during inspiration.
  - (3) Inspiration occurs when atmospheric pressure is less than intrapulmonary pressure.
  - (4) Expiration is initiated due to contraction of diaphragm.

BBG097

12. The maximum volume of air a person can breathe in after a forced expiration is known as:

- (1) Expiratory Capacity
- (2) Vital Capacity
- (3) Inspiratory Capacity
- (4) Total lung Capacity

BBG098

## NEET (UG) 2020

13. Identify the wrong statement with reference to transport of oxygen.
- (1) Low  $p\text{CO}_2$  in alveoli favours the formation of oxyhaemoglobin.
  - (2) Binding of oxygen with haemoglobin is mainly related to partial pressure of  $\text{O}_2$ .
  - (3) Partial pressure of  $\text{CO}_2$  can interfere with  $\text{O}_2$  binding with haemoglobin.
  - (4) Higher  $\text{H}^+$  conc. in alveoli favours the formation of oxyhaemoglobin.

BBG099



14. Select the correct events that occur during inspiration.

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

BBG100

NEET (UG) 2020 (COVID-19)

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

- (1) RV; IC (Inspiratory Capacity); EC (Expiratory Capacity); and ERV
- (2) RV; ERV; IC and EC
- (3) RV; ERV; VC (Vital Capacity) and FRC (Functional Residual Capacity)
- (4) RV (Residual Volume); ERV (Expiratory Reserve Volume); TV (Tidal Volume); and IRV (Inspiratory Reserve Volume)

BBG101

16. Match the following columns and select the correct option :

|     | Column-I                          |       | Column-II            |
|-----|-----------------------------------|-------|----------------------|
| (a) | Pneumotaxic Centre                | (i)   | Alveoli              |
| (b) | O <sub>2</sub> Dissociation       | (ii)  | Pons region of brain |
| (c) | Carbonic Anhydrase                | (iii) | Haemoglobin          |
| (d) | Primary site of exchange of gases | (iv)  | R.B.C.               |

- (1) (a)-(i), (b)-(iii), (c)-(ii), (d)-(iv)
- (2) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
- (3) (a)-(iii), (b)-(ii), (c)-(iv), (d)-(i)
- (4) (a)-(iv), (b)-(i), (c)-(iii), (d)-(ii)

BBG102

NEET (UG) 2021

17. The partial pressures (in mm Hg) of oxygen (O<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>) at alveoli (the site of diffusion) are :

- (1) pO<sub>2</sub> = 104 and pCO<sub>2</sub> = 40
- (2) pO<sub>2</sub> = 40 and pCO<sub>2</sub> = 45
- (3) pO<sub>2</sub> = 95 and pCO<sub>2</sub> = 40
- (4) pO<sub>2</sub> = 159 and pCO<sub>2</sub> = 0.3

BBG103

18. Select the favourable conditions required for the formation of oxyhaemoglobin at the alveoli.

- (1) High pO<sub>2</sub>, low pCO<sub>2</sub>, less H<sup>+</sup>, lower temperature
- (2) Low pO<sub>2</sub>, high pCO<sub>2</sub>, more H<sup>+</sup>, higher temperature
- (3) High pO<sub>2</sub>, high pCO<sub>2</sub>, less H<sup>+</sup>, higher temperature
- (4) Low pO<sub>2</sub>, low pCO<sub>2</sub>, more H<sup>+</sup>, higher temperature

BBG104

NEET (UG) 2022

19. Which of the following is **not** the function of conducting part of respiratory system ?

- (1) Inhaled air is humidified
- (2) Temperature of inhaled air is brought to body temperature
- (3) Provides surface for diffusion of O<sub>2</sub> and CO<sub>2</sub>
- (4) It clears inhaled air from foreign particles

BBG105

## Breathing and Exchange of Gases

20. Under normal physiological conditions in human being every 100 ml of oxygenated blood can deliver \_\_\_\_\_ ml of  $O_2$  to the tissues.

(1) 5ml      (2) 4 ml      (3) 10 ml      (4) 2 ml

BBG106

21. Which of the following statements are correct with respect to vital capacity?

- (a) It includes ERV, TV and IRV  
 (b) Total volume of air a person can inspire after a normal expiration  
 (c) The maximum volume of air a person can breathe in after forced expiration  
 (d) It includes ERV, RV and IRV.  
 (e) The maximum volume of air a person can breath out after a forced inspiration.

Choose the **most appropriate answer** from the options given below:

- (1) (b), (d) and (e)      (2) (a), (c) and (d)  
 (3) (a), (c) and (e)      (4) (a) and (e)

BBG107

## NEET (UG) 2023

22. Vital capacity of lung is \_\_\_\_\_.

- (1)  $IRV + ERV + TV + RV$   
 (2)  $IRV + ERV + TV - RV$   
 (3)  $IRV + ERV + TV$   
 (4)  $IRV + ERV$

BBG155

## NEET (UG) MANIPUR 2023

23. Select the sequence of steps in Respiration.

- (A) Diffusion of gases ( $O_2$  and  $CO_2$ ) across alveolar membrane.  
 (B) Diffusion of  $O_2$  and  $CO_2$  between blood and tissues.  
 (C) Transport of gases by the blood.

- (D) Pulmonary ventilation by which atmospheric air is drawn in and  $CO_2$  rich alveolar air is released out.

- (E) Utilisation of  $O_2$  by the cells for catabolic reactions are resultant release of  $CO_2$ .

Choose the **correct** answer from the options given below :-

- (1) (D), (A), (C), (B), (E)  
 (2) (C), (B), (A), (E), (D)  
 (3) (B), (C), (E), (D), (A)  
 (4) (A), (C), (B), (E), (D)

BBG156

24. **Assertion (A)** : A person goes to high altitude and experiences 'Altitude Sickness' with symptoms like breathing difficulty and heart palpitations.

**Reason (R)** : Due to low atmospheric pressure at high altitude, the body does not get sufficient oxygen.

In the light of the above statements, choose the **correct** answer from the options given below :-

- (1) **(A)** is true but **(R)** is false.  
 (2) **(A)** is false but **(R)** is true.  
 (3) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**.  
 (4) Both **(A)** and **(R)** are true but **(R)** is not the correct explanation of **(A)**.

BBG157

## NEET (UG) 2024

25. Which of the following factors are favourable for the formation of oxyhaemoglobin in alveoli?

- (1) High  $pO_2$  and High  $pCO_2$   
 (2) High  $pO_2$  and Lesser  $H^+$  concentration  
 (3) Low  $pCO_2$  and High  $H^+$  concentration  
 (4) Low  $pCO_2$  and High temperature

BBG158

26. Match List I with List II :

|    | List I                       |      | List II                                                               |
|----|------------------------------|------|-----------------------------------------------------------------------|
| A. | Expiratory capacity          | I.   | Expiratory reserve volume + Tidal Volume + Inspiratory reserve volume |
| B. | Functional residual capacity | II.  | Tidal volume + Expiratory reserve volume                              |
| C. | Vital capacity               | III. | Tidal volume + Inspiratory reserve volume                             |
| D. | Inspiratory capacity         | IV.  | Expiratory reserve volume + Residual volume                           |

Choose the correct answer from the options given below :-

- (1) A-II, B-IV, C-I, D-III
- (2) A-III, B-II, C-IV, D-I
- (3) A-II, B-I, C-IV, D-III
- (4) A-I, B-III, C-II, D-IV

BBG159

RE-NEET (UG) 2024

27. Match List-I with List-II.

|    | List I          |     | List II                                                                |
|----|-----------------|-----|------------------------------------------------------------------------|
| A. | Residual Volume | I.  | Maximum volume of air that can be breathed in after forced expiration. |
| B. | Vital Capacity  | II. | Volume of air inspired or expired during normal respiration.           |

|    |                     |      |                                                             |
|----|---------------------|------|-------------------------------------------------------------|
| C. | Expiratory Capacity | III. | Volume of air remaining in lungs after forcible expiration. |
| D. | Tidal Volume        | IV.  | Total volume of air expired after normal inspiration.       |

Choose the **correct answer** from the options given below :-

- (1) A-IV, B-III, C-II, D-I
- (2) A-II, B-IV, C-I, D-III
- (3) A-III, B-I, C-IV, D-II
- (4) A-I, B-II, C-III, D-IV

BBG160

28. **Assertion A** : During the transportation of gases about 20-25 percent of CO<sub>2</sub> is carried by Haemoglobin as carbamino-haemoglobin.

**Reason R** : This binding is related to high pCO<sub>2</sub> and low pO<sub>2</sub> in tissues.

In the light of the above statements, choose the **correct** answer from the options given below :

- (1) **A** is true but **R** is false
- (2) **A** is false but **R** is true
- (3) Both **A** and **R** are true and **R** is the correct explanation of **A**.
- (4) Both **A** and **R** are true but **R** is NOT the correct explanation of **A**.

BBG161

EXERCISE-II (Previous Year Questions)

ANSWER KEY

| Question | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Answer   | 1  | 1  | 2  | 4  | 4  | 4  | 1  | 2  | 2  | 1  | 2  | 2  | 4  | 2  | 4  |
| Question | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |    |    |
| Answer   | 2  | 1  | 1  | 3  | 1  | 3  | 3  | 1  | 3  | 2  | 1  | 3  | 3  |    |    |

## Exercise - III

## Master Your Understanding

## (A) NCERT BASED QUESTIONS

1. Which is a common passage for food and air?  
(1) Trachea  
(2) Oesophagus  
(3) Pharynx  
(4) Glottis  
**BBG108**
2. The function of conducting part in respiratory system of human is :-  
(1) Clears foreign particles.  
(2) Humidifies atmospheric air  
(3) Brings the air to body temperature  
(4) All of the above  
**BBG109**
3. When there is no air in initial bronchioles, they does not collapse. It is due to :-  
(1) Presence of Lecithin  
(2) Presence of incomplete cartilaginous rings  
(3) Presence of complete cartilaginous rings  
(4) Presence of mucous  
**BBG110**
4. Which of the following steps not involved in respiration?  
(1) Diffusion of gases across alveolar membrane  
(2) Transport of gases by the blood  
(3) Provide nutrients to all the living cells of body  
(4) Utilisation of  $O_2$  by the cells for catabolic reactions and resultant release of  $CO_2$ .  
**BBG111**

5. Inspiration can occur, when –  
(1) Pressure within the lungs is less than the atmospheric pressure.  
(2) Pressure within the lungs is more than the atmospheric pressure.  
(3) Pressure within the lungs and atmospheric air is same.  
(4) No effect of pressure on inspiration.  
**BBG112**
6. By the contraction in diaphragm volume of thoracic chamber increases in the :-  
(1) Dorso-ventral axis  
(2) Antero-posterior axis  
(3) Dorso-posterior axis  
(4) Antero-ventral axis  
**BBG113**
7. The primary muscle of inspiration is :-  
(1) Diaphragm  
(2) Intercostal muscle  
(3) Abdominal muscle  
(4) Oblique muscle  
**BBG114**
8. Total volume of air a person can expire after normal inspiration is :-  
(1) Vital capacity  
(2) Functional residual capacity  
(3) Inspiratory capacity  
(4) Expiratory capacity  
**BBG115**
9. Which of the following factor can affect the rate of diffusion of gases?  
(1) Thickness of the membranes involved in diffusion  
(2) Solubility of the gases  
(3) Pressure of the gases  
(4) All of these  
**BBG116**

10. Which of the following is correct?

|     | Alveoli                  | Deoxygenated blood       | Tissue                    |
|-----|--------------------------|--------------------------|---------------------------|
| (1) | pO <sub>2</sub> =159mmHg | pCO <sub>2</sub> =40mmHg | pCO <sub>2</sub> =20 mmHg |
| (2) | pCO <sub>2</sub> =40mmHg | pO <sub>2</sub> =95mmHg  | pO <sub>2</sub> =40mmHg   |
| (3) | pO <sub>2</sub> =104mmHg | pCO <sub>2</sub> =45mmHg | pCO <sub>2</sub> =45mmHg  |
| (4) | pO <sub>2</sub> =40mmHg  | pO <sub>2</sub> =40mmHg  | pCO <sub>2</sub> =45mmHg  |

BBG117

11. What is true about diffusion capacity?

- (1) Diffusion capacity of CO<sub>2</sub> is much higher than O<sub>2</sub>
- (2) Diffusion capacity of O<sub>2</sub> is much higher than CO<sub>2</sub>
- (3) Diffusion capacity of O<sub>2</sub> and CO<sub>2</sub> is same
- (4) None of the above

BBG118

12. Which of the following statement is true?

- (1) 20-25 percent CO<sub>2</sub> is transported by RBCs.
- (2) 97 percent O<sub>2</sub> is transported by RBCs.
- (3) 70 percent CO<sub>2</sub> is carried as bicarbonate.
- (4) All of these are true.

BBG119

13. Binding of oxygen with haemoglobin is primarily related to :-

- (1) Partial pressure of O<sub>2</sub>
- (2) Partial pressure of CO<sub>2</sub>
- (3) H<sup>+</sup> ion concentration
- (4) Temperature

BBG120

14. In which the following factors can interfere in binding of O<sub>2</sub> with haemoglobin.

A → pCO<sub>2</sub>, B → H<sup>+</sup> ion concentration

C → Temperature

- (1) Only A
- (2) B, C
- (3) A and C
- (4) A, B, C

BBG121

15. The conditions which are favourable for the formation of oxyhaemoglobin :-

- (1) pO<sub>2</sub>↑, pCO<sub>2</sub>↑, H<sup>+</sup>conc.↓, Temperature↓
- (2) pO<sub>2</sub>↓, pCO<sub>2</sub>↓, H<sup>+</sup>conc.↑, Temperature↑
- (3) pO<sub>2</sub>↑, pCO<sub>2</sub>↓, H<sup>+</sup>conc.↓, Temperature↓
- (4) pO<sub>2</sub>↑, pCO<sub>2</sub>↑, H<sup>+</sup>conc.↓, Temperature↑

BBG122

16. Which of the following statement/s is/are correct?

- A. High concentration of carbonic anhydrase is present in RBCs.
- B. Minute quantities of carbonic anhydrase is present in plasma.
- C. Every 100 ml blood delivers approximately 4 ml of CO<sub>2</sub> to the alveoli.
- D. 20-25% CO<sub>2</sub> is carried by haemoglobin as carbaminohaemoglobin.

- (1) A, C and D
- (2) A and D
- (3) A, B, C and D
- (4) Only A

BBG123

17. Which of the following statement is incorrect?

- (1) Among vertebrates, fishes use gills whereas amphibians, reptiles, birds and mammals respire through lungs.
- (2) Mechanisms of breathing vary among different groups of animals depending mainly on their habitats and levels of organisation.
- (3) Lower invertebrates like sponges, coelenterates, flatworms, etc., exchange O<sub>2</sub> with CO<sub>2</sub> by osmosis over their entire body surface.
- (4) Earthworms use their moist cuticle and insects have a network of tubes (tracheal tubes) to transport atmospheric air within the body

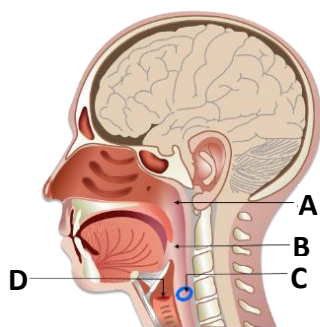
BBG124

18. A chemo sensitive area is situated adjacent to respiratory rhythm centre which is highly sensitive to \_\_\_\_\_ and \_\_\_\_\_ ions.

(1)  $O_2$ ,  $H^+$  (2)  $CO_2$ ,  $OH^-$   
(3)  $CO_2$ ,  $H^+$  (4)  $CO_2$ ,  $O_2$

BBG125

19. Label A, B, C and D in the diagram given below



- (1) A–Nasopharynx, B–Oropharynx, C–Glottis, D–Gullet  
(2) A–Nasopharynx, B–Oropharynx, C–Gullet, D–Glottis  
(3) A–Oropharynx, B–Nasopharynx, C–Gullet, D–Glottis  
(4) A–Oropharynx, B–Nasopharynx, C–Glottis, D–Gullet

BBG126

20. Chronic disorder in which alveolar wall are damaged due to which respiratory surface is decreased. One of the major causes of this is cigarette smoking :-

(1) Asthma (2) Emphysema  
(3) Bronchitis (4) Fibrosis

BBG127

21. What is the correct about alveoli?

(1) Thin, irregular-walled and vascularised bag-like structures  
(2) Thick, irregular-walled and vascularised bag-like structures

(3) Thin, regular-walled and vascularised bag-like structures  
(4) Thick, regular-walled and vascularised bag-like structures

BBG128

22. Total volume of air accommodate in the lungs at the end of forced inspiration :-

(1)  $TV + IRV$   
(2)  $TV + IRV + ERV$   
(3)  $TV + ERV$   
(4)  $TV + IRV + ERV + RV$

BBG129

23. Mark the true statement among the following with reference to normal breathing

(1) Inspiration is a passive process where as expiration is active  
(2) Inspiration is a active process where as expiration is passive  
(3) Inspiration and expiration are active processes  
(4) Inspiration and expiration are passive processes

BBG130

24. A person breathes in some volume of air by forced inspiration after having a forced expiration. This quantity of air taken in is

(1) Total lung capacity  
(2) Tidal volume  
(3) Vital capacity  
(4) Inspiratory capacity

BBG131

25. Mark the correct pair of muscles involved in the normal breathing in humans :-

(1) External and internal intercostal muscles  
(2) Diaphragm and abdominal muscles  
(3) Diaphragm and external intercostal muscles  
(4) Diaphragm and internal intercostal muscles

BBG132

26. The diffusion membrane is made up of three major layers namely.

- (1) The thin squamous epithelium of alveoli, the endothelium of alveolar capillaries and the basement substance in between them.
- (2) The thick squamous epithelium of alveoli, the endothelium of alveolar capillaries and the basement substance in between them.
- (3) The thin columnar epithelium of alveoli, the endothelium of alveolar capillaries and the basement substance in between them.
- (4) The thin columnar and cuboidal epithelium of alveoli, the endothelium of alveolar capillaries and the basement substance in between them.

BBG133

27. Which of the following group of animals, is used lungs for respiration?

- (1) Fishes, Frog, Tadpole larva
- (2) Fish, Mollusca, aquatic arthropods
- (3) Reptiles, Birds, Mammals
- (4) Insects, Earthworm, Mollusca

BBG134

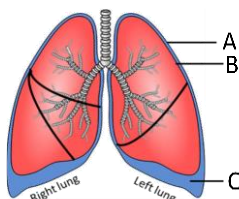
### (B) ANALYTICAL QUESTIONS

28. Whether a child died after normal birth or died before birth can be confirmed by measuring :

- (1) Tidal volume of air
- (2) Residual volume of air
- (3) The weight of the child
- (4) The dead space air

BBG135

29. Find the correct option for the diagram given below :



- (1) A–Parietal pleura, B–Visceral pleura, C–Pleural cavity filled with pleural fluid
- (2) A–Visceral pleura, B–Parietal pleura, C–Pleural cavity filled with pleural fluid
- (3) A–Parietal pericardium, B–Visceral pericardium, C–Pleural cavity filled with pleural fluid
- (4) A–Visceral pericardium, B–Parietal pericardium, C–Pleural cavity filled with pleural fluid

BBG136

30. Which of the following statement is correct?

- (1) Alveoli are the primary sites of exchange of gases
- (2) Exchange of gases occur at tissue level and alveolar surface.
- (3) Pressure contributed by an individual gas in a mixture of gases is called partial pressure and is represented as  $pO_2$  for oxygen and  $pCO_2$  for carbon dioxide.
- (4) All of the above.

BBG137

31. Identify A, B and C in the given sentence  
Inspiration is initiated by \_\_\_\_ A \_\_\_\_ of diaphragm which \_\_\_\_ B \_\_\_\_ the volume of thoracic chamber in \_\_\_\_ C \_\_\_\_ axis.

- (1) A–relaxation, B–increases, C–antero posterior axis
- (2) A–contraction, B–decreases, C–antero posterior axis
- (3) A–contraction, B–increases, C–antero posterior axis
- (4) A–relaxation, B–contraction, C–antero posterior axis

BBG138



- 32.** In lungs, there is definite exchange of ions between RBC and Plasma. Removal of  $\text{CO}_2$  from blood involves :
- (1) efflux of  $\text{Cl}^-$  ions from RBC
  - (2) influx of  $\text{Cl}^-$  ions into RBC.
  - (3) influx of  $\text{HCO}_3^-$  ions into Plasma.
  - (4) efflux of  $\text{HCO}_3^-$  ions from RBC.
- BBG139**
- 33.** The chloride content of RBC will be higher than that of plasma in :-
- (1) Systemic arteries and pulmonary veins.
  - (2) Systemic veins and pulmonary arteries.
  - (3) Systemic arteries and pulmonary arteries.
  - (4) Systemic veins and pulmonary veins.
- BBG140**
- 34.** Which of the following lung volumes or capacities can be measured by spirometer?
- (1) Functional residual capacity [FRC]
  - (2) Residual volume
  - (3) Total lung capacity [TLC]
  - (4) Vital capacity
- BBG141**
- 35.** Which of the following statement is incorrect?
- (1) A healthy man can inspire or expire approximately 6000 to 8000 ml of air per second.
  - (2) Total volume of air that can accommodated in the lungs at the end of forced inspiration is called total lung capacity.
  - (3) Total volume of air a person can expire after a normal inspiration is called expiratory capacity.
  - (4) Amount of air remain in lungs even after deep and forceful expiration is called residual volume of air.
- BBG142**
- 36.** The respiratory membranes facilitates the exchange of respiratory gases through diffusion. Oxygen enters the deoxygenated blood through diffusion because :-
- (1) Partial pressure of oxygen in alveolar air and capillaries is 40 mm Hg and 104 mm Hg respectively.
  - (2) Partial pressure of oxygen in alveolar air and capillaries is 104 mm Hg and 40 mm Hg respectively.
  - (3) Partial pressure of oxygen in alveolar air and capillaries is 46 mm Hg and 40 mm Hg respectively.
  - (4) Partial pressure of oxygen in alveolar air and capillaries is 40 mm Hg and 46 mm Hg respectively.
- BBG143**
- 37.** Blood do not become acidic although it carries  $\text{CO}_2$  because :-
- (1)  $\text{CO}_2$  is continuously diffused through tissues.
  - (2)  $\text{CO}_2$  combines with  $\text{H}_2\text{O}$  to form  $\text{HCO}_3^-$
  - (3) In  $\text{CO}_2$  transport, buffers plays an important role.
  - (4)  $\text{CO}_2$  is absorbed by WBC.
- BBG144**
- 38.** The amount of  $\text{CO}_2$  that can diffuse through the diffusion membrane per unit difference in partial pressure is much higher compared to that of  $\text{O}_2$ . Why?
- (1) Because diffusion of gases takes place only at alveoli
  - (2) Because the solubility of  $\text{CO}_2$  is 20-25 times lesser than that of  $\text{O}_2$
  - (3) Because the solubility of  $\text{CO}_2$  is 20-25 times higher than that of  $\text{O}_2$
  - (4) Because alveoli are very large in number
- BBG145**



39. Find out the correct match from the following table:

|       | Column I           | Column II          | Column III         |
|-------|--------------------|--------------------|--------------------|
| (i)   | At tissue level    | $pO_2 = 40$ mm Hg  | $pCO_2 = 45$ mm Hg |
| (ii)  | In pulmonary vein  | $pO_2 = 95$ mm Hg  | $pCO_2 = 50$ mm Hg |
| (iii) | In systemic artery | $pO_2 = 40$ mm Hg  | $pCO_2 = 40$ mm Hg |
| (iv)  | In alveoli         | $pO_2 = 104$ mm Hg | $pCO_2 = 40$ mm Hg |

- (1) Both (i) and (ii)      (2) Both (iii) and (iv)  
 (3) (i), (ii) and (iii)      (4) Both (i) and (iv)

BBG146

40. Match the following columns.

| Column I                                | Column II                                                                        |
|-----------------------------------------|----------------------------------------------------------------------------------|
| A    Inspiratory capacity (IC)          | 1    Total air, a person can inspire after normal expiration                     |
| B    Expiratory capacity (EC)           | 2    Maximal volume of the air, a person can breath in after a forced expiration |
| C    Functional residual capacity (FRC) | 3    Volume of the air that will remain in lungs after a normal expiration       |
| D    Vital capacity (VC)                | 4    Total volume of air a person can expire after a normal inspiration          |

Codes :-

- |     |   |   |   |   |
|-----|---|---|---|---|
|     | A | B | C | D |
| (1) | 1 | 2 | 3 | 4 |
| (2) | 1 | 4 | 3 | 2 |
| (3) | 1 | 4 | 2 | 3 |
| (4) | 4 | 1 | 3 | 2 |

BBG147

41. Which of the following option gives correct information about the coverings of thoracic cage on various surfaces :-

|     | Anterior surface        | Posterior surface | Dorsal surface          |
|-----|-------------------------|-------------------|-------------------------|
| (1) | Sternum and Ribs        | Ribs              | Diaphragm               |
| (2) | Sternum and Ribs        | Diaphragm         | Clavicle bones and neck |
| (3) | Sternum and Ribs        | Vertebral column  | Clavicle bones and neck |
| (4) | Clavicle bones and neck | Diaphragm         | Vertebral column        |

BBG148

42. Considering the following labels for mentioned structures and select the correct sequence of their arrangement :-

A = Terminal bronchioles

B = Respiratory bronchioles

C = Tertiary bronchi

D = Primary bronchi

E = Secondary bronchi

F = Total pulmonary bronchioles

- (1) D → E → C → F → A → B  
 (2) A → B → D → E → C → F  
 (3) C → F → A → B → D → E  
 (4) D → E → F → C → B → A

BBG149

## Breathing and Exchange of Gases

**43.** Consider the following four statements (a-d) and select the option which includes all the correct ones only :-

- (a) All the time of inspiration, contraction in diaphragm and external intercostal muscles take place.
- (b) Normal breathing is also called as abdominal breathing.
- (c) Expiration during sneezing, coughing, yoga is normal expiration during which IICM and abdominal muscles relax.
- (d) Inspiration can occur if the pressure within lungs (intra pulmonary pressure) is more than the atmospheric pressure.

- (1) Statements (a), (b), (c), (d)
- (2) Statements (a) only
- (3) Statements (a), (b), (c)
- (4) Statements (a) and (b)

**BBG150**

**44.** Find out the **correct** match from the following table :-

|       | Column-I                        | Column-II       | Column-III |
|-------|---------------------------------|-----------------|------------|
| (i)   | Tidal volume (TV)               | (EC - ERV)      | 500 ml     |
| (ii)  | Expiratory reserve volume (ERV) | (VC - IRV - TV) | 3000 ml    |
| (iii) | Vital capacity (VC)             | IRV + ERV + RV  | 4500 ml    |
| (iv)  | Residual volume (RV)            | FRC - ERV       | 1200 ml    |

- (1) (i) and (ii)
- (2) (i), (iii) and (iv)
- (3) (i), (ii) and (iii)
- (4) (i) and (iv)

**BBG151**

**45.** Find out the **correct** match from the following:

- (i) **Larynx** – sound box
- (ii) **Trachea** – complete cartilaginous rings
- (iii) **Epiglottis** – elastic cartilaginous flap
- (iv) **Alveoli** – very thin, irregular walled, vascularised bag like structures
- (v) **Pleural fluid** – reduces friction on the lung surface

- (1) (i), (ii), (iii), (iv), (v)
- (2) (i), (iii), (iv), (v)
- (3) (i), (iii), (v)
- (4) (i) and (v)

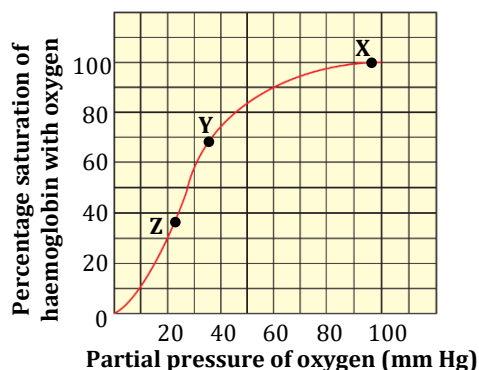
**BBG152**

**46.** Which of the following statement is **not correct**?

- (1) Formation of oxyhaemoglobin is a process of oxidation.
- (2) Every 100 ml of oxygenated blood can deliver around 5 ml of O<sub>2</sub> to tissue under physiological condition.
- (3) Dissociation curve is curve between percentage saturation of Hb with oxygen and partial pressure of oxygen.
- (4) High concentration of CO<sub>2</sub> activates dissociation of oxyhaemoglobin is called Bohr's effect.

**BBG153**

47. Given below graph shows an oxygen dissociation curve :-



Where in the body will haemoglobin be saturated at the percentage shown at points X, Y and Z.

- (1) X-Pulmonary artery, Y-Pulmonary vein, Z-Carotid artery
- (2) X-Systemic artery, Y-Pulmonary artery, Z-Pulmonary vein
- (3) X-Pulmonary vein, Y-Systemic vein, Z-Systemic vein during exercise
- (4) X-Left ventricle, Y-Right ventricle, Z-Systemic artery

BBG154

48. Which one of the following statements is **incorrect** ?

- (1) The residual air in lungs slightly decreases the efficiency of respiration in mammals
- (2) The presence of non-respiratory air sacs, increases the efficiency of respiration in birds
- (3) In insects, circulating body fluids serve to distribute oxygen to tissues
- (4) The principle of counter current flow facilitates efficient respiration in gills of fishes

BBG073

49. The majority of carbon dioxide produced by our body cells is transported to the lungs :

- (1) Dissolved in the blood
- (2) As bicarbonates
- (3) As carbonates
- (4) Attached to haemoglobin

BBG074

50. What is vital capacity of our lungs ?

- (1) Inspiratory reserve volume plus expiratory reserve volume.
- (2) Total lung capacity minus Residual volume.
- (3) Inspiratory reserve volume plus Tidal volume.
- (4) Total lung capacity minus Expiratory reserve volume.

BBG077

51. Listed below are four respiratory capacities (a-d) and four jumbled respiratory volumes of a normal human adult :

|     | Respiratory capacities     | Respiratory volumes |
|-----|----------------------------|---------------------|
| (a) | Residual volume            | 2500 mL             |
| (b) | Vital capacity             | 3500 mL             |
| (c) | Inspiratory reserve volume | 1200 mL             |
| (d) | Inspiratory capacity       | 4500 mL             |

Which one of the following is the **correct** matching of two capacities and volumes?

- (1) (a) 4500 mL, (b) 3500 mL
- (2) (b) 2500 mL, (c) 4500 mL
- (3) (c) 1200 mL, (d) 2500 mL
- (4) (d) 3500 mL, (a) 1200 mL

BBG078

52. What is true about RBCs in humans ?

- (1) They do not carry  $\text{CO}_2$  at all.
- (2) They carry about 20-25 per cent of  $\text{CO}_2$ .
- (3) They transport 99.5 per cent of  $\text{O}_2$ .
- (4) They transport about 80 percent oxygen only and the rest 20 per cent of it is transported in dissolved state in blood plasma.

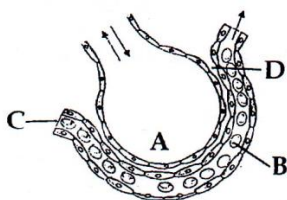
**BBG079**

53. Two friends are eating together on a dining table. One of them suddenly starts coughing while swallowing some food. This coughing would have been due to improper movement of-

- |                |               |
|----------------|---------------|
| (1) Epiglottis | (2) Diaphragm |
| (3) Neck       | (4) Tongue    |

**BBG080**

54. The figure given below shows a small part of human lung where exchange of gases takes place. In which one of the options given below, the one part, A, B, C or D is correctly identified along with its function



**Options :**

- (1) C → Arterial capillary-passes oxygen to tissues
- (2) A → Alveolar cavity-main site of exchange of respiratory gases
- (3) D → Capillary wall-exchange of  $\text{O}_2$  and  $\text{CO}_2$  takes place here
- (4) B → Red blood cell-transport of  $\text{CO}_2$  mainly

**BBG081**

55. A large proportion of oxygen is left unused in the human blood even after its uptake by the body tissues. This  $\text{O}_2$  :

- (1) Acts as a reserve during muscular exercise
- (2) Raises the  $\text{pCO}_2$  of blood to 75 mm of Hg.
- (3) Is enough to keep oxyhaemoglobin saturation at 96%
- (4) Helps in releasing more  $\text{O}_2$  to the epithelial tissues

**BBG082**

56. Bulk of carbon dioxide ( $\text{CO}_2$ ) released from body tissues into the blood is present as :

- (1) Carbamino-haemoglobin in RBCs
- (2) Bicarbonate in blood plasma and RBCs
- (3) Free  $\text{CO}_2$  in blood plasma
- (4) 70% carbamino-haemoglobin and 30% as bicarbonate

**BBG083**

57. Which one of the following is the correct statement for respiration in humans ?

- (1) Workers in grinding and stone-breaking industries may suffer from lung fibrosis
- (2) About 90% of carbon dioxide ( $\text{CO}_2$ ) is carried by haemoglobin as carbamino haemoglobin
- (3) Cigarette smoking may lead to inflammation of bronchi
- (4) Neural signals from pneumotaxic centre in pons region of brain can increase the duration of inspiration

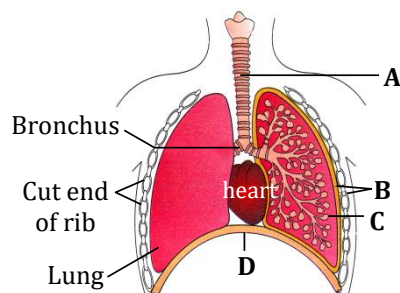
**BBG084**

58. People who have migrated from the planes to an area adjoining Rohtang pass about six months back:

- (1) suffer from altitude sickness with symptoms like nausea, fatigue, etc.
- (2) have the usual RBC count but their haemoglobin has very high binding affinity to  $O_2$
- (3) have more RBCs and their haemoglobin has a lower binding affinity to  $O_2$
- (4) are not physically fit to play games like football.

BBG085

59. 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 and/or characteristic :-



- (1) **D** – Lower end of lungs – diaphragm pulls it down during inspiration
- (2) **A** – trachea - long tube supported by complete cartilaginous rings for conducting inspired air
- (3) **B** – pleural membrane - surround ribs on both sides to provide cushion against rubbing
- (4) **C** – Alveoli - thin walled vascular bag like structures for exchange of gases

BBG086

### Exercise - III

### ANSWER KEY

| Question | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Answer   | 3  | 4  | 2  | 3  | 1  | 2  | 1  | 4  | 4  | 3  | 1  | 4  | 1  | 4  | 3  |
| Question | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| Answer   | 3  | 3  | 3  | 2  | 2  | 1  | 4  | 2  | 3  | 3  | 1  | 3  | 2  | 1  | 4  |
| Question | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| Answer   | 3  | 1  | 2  | 4  | 1  | 2  | 3  | 3  | 4  | 2  | 4  | 1  | 4  | 4  | 2  |
| Question | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 |    |
| Answer   | 1  | 3  | 3  | 2  | 2  | 4  | 2  | 1  | 2  | 1  | 2  | 1  | 3  | 4  |    |