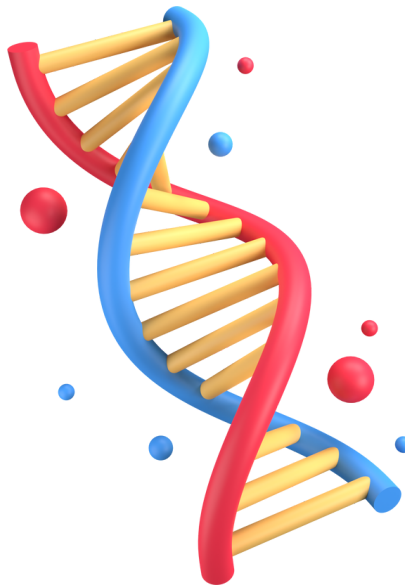


ZOOLOGY

ENTHUSIAST | LEADER | ACHIEVER



EXERCISE

Breathing and exchange of gases

ENGLISH MEDIUM

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

RS0001

2. Which of the following prevents collapsing of Trachea
(1) Muscles
(2) Diaphragm
(3) Ribs
(4) Cartilagenous rings

RS0002

3. Simplest respiratory organ is :
(1) gills
(2) contractile vacuole
(3) skin
(4) lungs

RS0003

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

RS0004

5. Which one of the following has the smallest diameter ?
(1) Right primary bronchus
(2) Secondary bronchi
(3) Trachea
(4) Respiratory bronchioles

RS0005

6. Match the columns

Column I		Column II	
(a)	Larynx	(p)	Lid of glottis
(b)	Trachea	(q)	Air Sac
(c)	Alveoli	(r)	Voice Box
(d)	Epiglottis	(s)	Wind Pipe
		(t)	Common Passage

- (1) a—r, b—s, c—q, d—p
(2) a—t, b—s, c—p, d—q
(3) a—r, b—s, c—q, d—t
(4) a—r, b—t, c—q, d—p

RS0006

7. Adam's Apple represents
(1) Arytenoid cartilage of larynx
(2) Cricoid cartilage of larynx
(3) Thyroid cartilage of larynx
(4) All the above

RS0007

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

RS0010

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

RS0011

10. Residual air mostly occurs in
(1) Alveoli (2) Bronchus
(3) Nostrils (4) Trachea

RS0012

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

RS0013

12. "Epiglottis" is made up by :—
(1) Elastic cartilage (2) Fibrous cartilage
(3) Hyaline cartilage (4) Bony structure

RS0014

13. Air is breathed through
(1) Trachea → lungs → larynx → pharynx → alveoli
(2) Nose → larynx → pharynx → bronchus → alveoli → bronchioles
(3) Nostrils → pharynx → larynx → trachea → bronchi → bronchioles → alveoli
(4) Nose → trachea → larynx → bronchi → pharynx → alveoli

RS0015

14. Lungs are covered by
(1) Perichondrium (2) Pleural sac
(3) Pericardium (4) Peristomium
RS0016
15. 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
RS0019
16. 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
RS0021
17. 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.
RS0022
18. About 1500 ml of air left in lungs is called
(1) Tidal volume
(2) Inspiratory reserve volume
(3) Residual volume
(4) Vital capacity
RS0023
19. At high altitude, RBC of human blood will
(1) Increase in number
(2) Decrease in number
(3) Decrease in size
(4) Increase in size
RS0024
20. Which one has the lowest value?
(1) Tidal volume
(2) Vital capacity
(3) Inspiratory reserve volume
(4) Expiratory reserve volume
RS0025
21. 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
RS0026
22. Total lung capacity is
(1) One lit (2) 3 lit (3) 6 lit (4) 8 lit
RS0027
23. Air that remains in lung after most powerful expiration is
(1) Inspiratory air (2) Dead space air
(3) Tidal air (4) Residual air
RS0028
24. During normal respiration without any effort the volume of air inspired or expired is called –
(1) Tidal volume
(2) Inspiratory volume
(3) Residual volume
(4) Expiratory reserve volume
RS0029
25. 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
RS0030
26. Which instrument helps in clinical assessment of pulmonary volumes?
(1) Sphygmomanometer
(2) Stethoscope
(3) Spirometer
(4) Electrocardiograph
RS0031

- 27.** Volume of air remains in the lungs after normal expiration is
 (1) ERV + RV
 (2) IRV + RV
 (3) RV + IRV + ERV
 (4) TV
RS0032
- 28.** Which of the following volume is not included in vital capacity?
 (1) ERV (2) TV
 (3) IRV (4) RV
RS0033
- 29.** The Upper region of Pharynx in human is called :-
 (1) Oropharynx
 (2) Nasopharynx
 (3) Laryngopharynx
 (4) None of these
RS0169
- 30.** What is correct ?
 (1) Pulmonary ventilation is equal to alveolar ventilation.
 (2) Alveolar ventilation is less than pulmonary ventilation.
 (3) Alveolar ventilation is more than pulmonary ventilation.
 (4) Both are variable.
RS0170
- 31.** Similarity between the trachea of cockroach and man is that
 (1) Both are paired and branched
 (2) Ciliated epithelium is present in both
 (3) Walls of both can not be deformed/non collapsible walls
 (4) In both head originates from pharynx.
RS0171
- 32.** 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.
RS0172
- 33.** 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.
RS0034
- 34.** In lung, gaseous exchange is done by :-
 (1) Simple diffusion
 (2) Active transport
 (3) Passive transport
 (4) facilitated diffusion
RS0035
- 35.** 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
RS0036
- 36.** 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
RS0037
- 37.** 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
RS0038

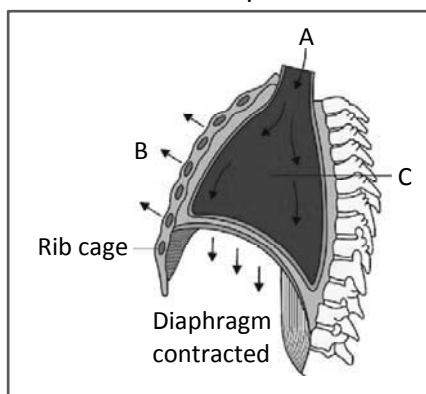
38. Partial pressure of CO_2 is higher :-

- (1) At alveolar level
- (2) At tissue level
- (3) In atmosphere
- (4) In oxygenated blood

RS0039

39. 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

RS0173

40. Almost same $p\text{O}_2$ 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

RS0174

41. Exchange of gases in lung alveoli occurs through

- (1) Active transport
- (2) Osmosis
- (3) Simple diffusion
- (4) Passive transport

RS0175

42. Arrange the following in the order of 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)

RS0176

43. 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

RS0041

44. Haldane effect is due to

- (1) CO_2
- (2) Lactic acid
- (3) pH
- (4) Oxyhaemoglobin

RS0042

45. What percentage of CO_2 flows in blood in form of bicarbonates?

- (1) 7%
- (2) 23%
- (3) 50%
- (4) 70%

RS0043

46. Effect of CO_2 concentration on dissociation of oxyhaemoglobin is called

- (1) Bohr's effect
- (2) Haldane effect
- (3) Hamburger effect
- (4) Root effect

RS0044

47. Chloride shift for the transport of

- (1) O_2
- (2) CO_2
- (3) CO
- (4) O_3

RS0045

48. 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.

RS0047

- 49.** 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
RS0048
- 50.** For proper transport of O₂ and CO₂ blood should be
 (1) Slightly acidic
 (2) Strongly acidic
 (3) Strongly alkaline
 (4) Slightly alkaline
RS0049
- 51.** 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
RS0050
- 52.** 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
RS0051
- 53.** Chloride shift occurs in respond to :
 (1) H⁺ (2) K⁺
 (3) HCO₃⁻ (4) Na⁺
RS0052
- 54.** What happen to the O₂ dissociation curve of Hb if pH is decreased ?
 (1) shift to left
 (2) shift to right
 (3) remain unchanged
 (4) will oscillate erratically
RS0053
- 55.** Dissociation curve shifts to the right when:-
 (1) CO₂ concentration decreases
 (2) CO₂ concentration increases
 (3) O₂ concentration increases
 (4) H⁺ concentration decreases
RS0054
- 56.** Oxyhaemoglobin acts as
 (1) Alkali (2) Acid
 (3) Neutral (4) Buffer
RS0056
- 57.** The oxygen- Haemoglobin dissociation curve will show a right shift in case of :-
 (1) Less H⁺ concentration
 (2) High partial pressure of O₂
 (3) Low partial pressure of CO₂
 (4) High 2,3, B.P.G.
RS0057
- 58.** Which of the following conditions are found in the alveoli of lungs :
 I. high PO₂ II. low PCO₂
 III. high PCO₂ IV. low PO₂
 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
RS0177
- 59.** Binding of CO₂ to oxyhaemoglobin occurs when
 (1) pCO₂ is high and pO₂ is less in tissue
 (2) pCO₂ is low and pO₂ is high in tissue
 (3) pCO₂ is low and pO₂ is low in tissue
 (4) pCO₂ is high and pO₂ is high in tissue
RS0178

60. In Bohr's effect curve shift to right when :-
 (1) $p\text{CO}_2$ decreases and $p50$ of O_2 increases
 (2) $p\text{CO}_2$ increases and $p50$ of O_2 decreases
 (3) $p\text{CO}_2$ increases and $p50$ of O_2 increases
 (4) $p\text{CO}_2$ increases and $p50$ of O_2 decreases and pH increases

RS0179

61. In which three forms CO_2 is transported by blood
 (1) As a solution, Carbamino compounds, bicarbonates
 (2) As a solution, Carbamino proteins, KHCO_3
 (3) As a solution, Carbamino haemoglobin, NaHCO_3
 (4) As a solution, Carbamino compound, H_2CO_3

RS0180

62. H.Hb is
 (1) H_2b
 (2) Heavy hydrogen bond
 (3) Reduced bromide
 (4) Haemoglobin acid

RS0181

63. The human ribs
 (1) Are accessory respiratory organs
 (2) Do not help in breathing
 (3) Are main respiratory organs
 (4) Are not respiratory organs

RS0182

64. During transport of CO_2 blood does not become acidic due to
 (1) Neutralisation of H_2CO_3 by Na_2CO_3
 (2) Absorption by leucocytes
 (3) Blood buffers
 (4) Non accumulation

RS0183

65. "Emphysema" is a condition in which -
 (1) Reparatory centre inhibited
 (2) Lot of fluid in the lungs
 (3) The walls separating the alveoli break
 (4) Lungs have more O_2

RS0059

66. Rate of respiration is directly affected by
 (1) CO_2 concentration
 (2) O_2 in trachea
 (3) Concentration of O_2
 (4) Diaphragm expansion

RS0060

67. CO is more toxic than CO_2 because it :
 (1) Damages lungs
 (2) It destroys haemoglobin
 (3) Affects the nervous system
 (4) Reduces the oxygen carrying capacity of haemoglobin

RS0062

68. Carbon monoxide has greater affinity for Haemoglobin as compare to oxygen :-
 (1) 1000 Times
 (2) 200 Times
 (3) 20 Times
 (4) 2 Times

RS0063

69. 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

RS0064

70. Increased asthmatic attacks in contain seasons are related to :-
 (1) Hot and humid environment
 (2) Eating fruits preserved in tin containers
 (3) Inhalation of seasonal pollen
 (4) Low temperature

RS0185

71. Disease aggravated by pollution is :-

- (1) Haemophilia
- (2) Rheumatism
- (3) Scurvy
- (4) Bronchitis

RS0186

72. 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 | |

RS0187

EXERCISE-I (Conceptual Questions)

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	4	3	3	4	1	3	2	2	1	2	1	3	2	2
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	3	4	3	1	1	3	3	4	1	4	3	1	4	2	2
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	3	1	2	1	4	3	2	2	3	3	3	2	3	4	4
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	1	2	1	4	4	3	1	3	2	2	2	4	4	1	3
Que.	61	62	63	64	65	66	67	68	69	70	71	72			
Ans.	3	4	4	3	3	1	4	2	1	3	4	2			

EXERCISE-II (Previous Year Questions)

AIPMT/NEET

AIPMT 2006

1. 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

RS0065

2. 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

RS0066

3. Bowman's glands are found in –

- (1) Olfactory epithelium
- (2) External auditory canal
- (3) Cortical nephrons only
- (4) Juxtamedullary nephrons

RS0067

AIPMT 2007

4. Bowman's glands are located in the :-

- (1) Olfactory epithelium of our nose
- (2) Proximal end of uriniferous tubules
- (3) Anterior pituitary
- (4) Female reproductive system of cockroach

RS0068

AIPMT 2008

5. 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

RS0070

AIPMT-Pre 2010

6. 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

RS0071

7. What is true about RBCs in humans ?

- (1) They do not carry CO₂ at all
- (2) They carry about 20-25 per cent of CO₂
- (3) They transport 99.5 per cent of O₂
- (4) They transport about 80 percent oxygen only and the rest 20 per cent of it is transported in dissolved state in blood plasma.

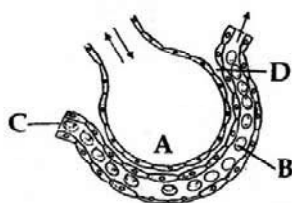
RS0072

AIPMT-Pre 2011

8. 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

RS0073

9. 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 O_2 and CO_2 takes place here
(4) B : red blood cell-transport of CO_2 mainly

RS0074

10. A large proportion of oxygen is left unused in the human blood even after its uptake by the body tissues. This O_2 :
- (1) Acts as a reserve during muscular exercise
(2) Raises the pCO_2 of blood to 75 mm of Hg.
(3) Is enough to keep oxyhaemoglobin saturation at 96%
(4) Helps in releasing more O_2 to the epithelial tissues

RS0075

AIPMT-Mains 2011

11. Bulk of carbon dioxide (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 CO_2 in blood plasma
(4) 70% carbamino-haemoglobin and 30% as bicarbonate

RS0076

AIPMT-Pre 2012

12. 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 (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

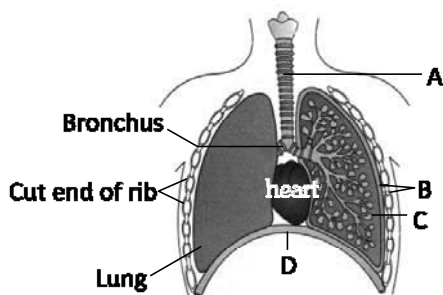
RS0077

13. People who have migrated from the plains 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.

RS0078

NEET-UG 2013

14. 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

RS0080

AIPMT 2014

15. 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

RS0081

AIPMT 2015

16. When you hold your breath, which of the following gas changes in blood would first lead to the urge to breathe?
- (1) rising CO_2 concentration
 - (2) falling CO_2 concentration
 - (3) rising CO_2 and falling O_2 concentration
 - (4) falling O_2 concentration

RS0082

NEET-I 2016

17. 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

RS0085

NEET-II 2016

18. 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
19. 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

RS0086

RS0087

NEET(UG) 2017

20. 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

RS0089

NEET(UG) 2018

21. 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

RS0091

22. 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

RS0092

23. Which of the following is an occupational respiratory disorder ? :
- (1) Anthracis
 - (2) Silicosis
 - (3) Botulism
 - (4) Emphysema

RS0093

NEET(UG) 2019

24. 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

RS0188

NEET(UG) 2019 (ODISHA)

25. 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.

RS0189

26. 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

RS0190

NEET(UG) 2020

27. 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 O_2 .
 - (3) Partial pressure of CO_2 can interfere with O_2 binding with haemoglobin.
 - (4) Higher H^+ conc. in alveoli favours the formation of oxyhaemoglobin.

RS0191

28. 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)

RS0192

NEET(UG) 2020 (COVID-19)

29. 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)

RS0193

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

Column - I

Column - II

- | | |
|---------------------------------------|---------------------------|
| (a) Pneumotaxic Centre | (i) Alveoli |
| (b) O ₂ Dissociation curve | (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)

RS0194

NEET(UG) 2021

31. The partial pressures (in mm Hg) of oxygen (O₂) and carbon dioxide (CO₂) at alveoli (the site of diffusion) are :
- (1) pO₂ = 104 and pCO₂ = 40
 - (2) pO₂ = 40 and pCO₂ = 45
 - (3) pO₂ = 95 and pCO₂ = 40
 - (4) pO₂ = 159 and pCO₂ = 0.3

RS0195

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

- (1) High pO₂, low pCO₂, less H⁺, lower temperature
- (2) Low pO₂, high pCO₂, more H⁺, higher temperature
- (3) High pO₂, high pCO₂, less H⁺, higher temperature
- (4) Low pO₂, low pCO₂, more H⁺, higher temperature

RS0196

NEET(UG) 2021 (Paper-2)

33. Match the columns and find the correct combination.

Column I
(Organism)Column II
(Respiratory Organ)

- | | |
|--------------|---------------|
| a. Earthworm | i. Pulmonary |
| b. Human | ii. Branchial |
| c. Prawn | iii. Tracheal |
| d. Insects | iv. Cutaneous |

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

RS0197

NEET(UG) 2022

34. Under normal physiological conditions in human being every 100 ml of oxygenated blood can deliver _____ ml of O₂ to the tissues.

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

RS0198

35. 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 O₂ and CO₂
- (4) It clears inhaled air from foreign particles

RS0199

NEET(UG) 2022 (OVERSEAS)

36. Which of the following disorders represents decrease in respiratory surface due to damaged alveolar walls?

- (1) Bronchitis (2) Asthma
(3) Emphysema (4) Hypocapnia

RS0200

37. In the regulation of respiration, a chemosensitive area adjacent to the rhythm centre in the medulla region of the brain, is highly sensitive to :

- (1) CO₂ (2) O₂
(3) N₂ (4) HCO₃⁻

RS0201

Re-NEET(UG) 2022

38. 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)

RS0202

39. Identify the region of human brain which has pneumotaxic centre that alters respiratory rate by reducing the duration of inspiration.

- (1) Medulla (2) Pons
(3) Thalamus (4) Cerebrum

RS0203

EXERCISE-II (Previous Year Questions)

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	2	1	1	2	4	2	1	2	1	2	1	3	4	1
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	1	2	4	4	4	1	2	2	1	2	2	4	2	4	2
Que.	31	32	33	34	35	36	37	38	39						
Ans.	1	1	2	1	3	3	1	3	2						

EXERCISE-III

Master Your Understanding

EXERCISE-III(A) (NCERT BASED QUESTIONS)

1. Which is a common passage for food and air?
 (1) Trachea (2) Oesophagus
 (3) Pharynx (4) Glottis

RS0096

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

RS0097

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 cartilagenous rings
 (3) Presence of complete cartilagenous rings
 (4) Presence of mucous

RS0098

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 .

RS0099

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.

RS0100

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

RS0101

7. The primary muscle of inspiration is :-
 (1) Diaphragm
 (2) Intercostal muscle
 (3) Abdominal muscle
 (4) Oblique muscle

RS0102

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

RS0103

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

RS0104

10. Which of the following is correct?

	Alveoli	Deoxy genated blood	Tissue
(1)	$PO_2=159\text{mmHg}$	$PCO_2=40\text{mmHg}$	$PCO_2=20\text{mmHg}$
(2)	$PCO_2=40\text{mmHg}$	$PO_2=95\text{mmHg}$	$PO_2=40\text{mmHg}$
(3)	$PO_2=104\text{mmHg}$	$PCO_2=45\text{mmHg}$	$PCO_2=45\text{mmHg}$
(4)	$PO_2=40\text{mmHg}$	$PO_2=40\text{mmHg}$	$PCO_2=45\text{mmHg}$

RS0105

11. What is true about diffusion capacity.
 (1) Diffusion capacity of CO_2 is much higher than O_2
 (2) Diffusion capacity of O_2 is much higher than CO_2
 (3) Diffusion capacity of O_2 and CO_2 is same
 (4) None of the above

RS0106

12. Which of the following statement is true?
 (1) 20-25 percent CO_2 is transported by RBCs.
 (2) 97 percent O_2 is transported by RBCs.
 (3) 70 percent CO_2 is carried as bicarbonate.
 (4) All of these are true.

RS0107

13. Binding of oxygen with haemoglobin is primarily related to :-
 (1) Partial pressure of O_2
 (2) Partial pressure of CO_2
 (3) H^+ ion concentration
 (4) Temperature

RS0108

14. In which the following factors can interfere in binding of O_2 with haemoglobin.

A- P_{CO_2}

B- H^+ ion concentration

C- Temperature

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

RS0109

15. The conditions which are favourable for the formation of oxyhaemoglobin :-
 (1) $\text{PO}_2 \uparrow$, $\text{PCO}_2 \uparrow$, H^+ conc. \downarrow , Temperature \downarrow
 (2) $\text{PO}_2 \downarrow$, $\text{PCO}_2 \downarrow$, H^+ conc. \uparrow , Temperature \uparrow
 (3) $\text{PO}_2 \uparrow$, $\text{PCO}_2 \downarrow$, H^+ conc. \downarrow , Temperature \downarrow
 (4) $\text{PO}_2 \uparrow$, $\text{PCO}_2 \uparrow$, H^+ conc. \downarrow , Temperature \uparrow

RS0110

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

A- A high concentration of carbonic anhydrase is present in RBC.

B- Minute quantities of carbonic anhydrase is present in plasma.

C- Every 100 ml blood delivers approximately 4 ml of CO_2 to the alveoli.

D- 20-25% CO_2 is carried by haemoglobin as carbaminohaemoglobin.

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

RS0111

17. Which of the following centre can moderate the functions of the respiratory rhythm centre?
 (1) Dorsal respiratory centre
 (2) Ventral respiratory centre
 (3) Pneumotaxic centre
 (4) Chemo sensitive centre

RS0112

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

RS0113

19. Respiratory rhythm centre is present in :-

- (1) Pons region
 (2) Aortic arch
 (3) Medulla region
 (4) Carotid artery

RS0114

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

RS0115

21. Regarding the functions of our conduction respiratory system, mark the wrong entry.

- (1) Humidifies the air
 (2) Warms up the air
 (3) Diffusion of gases
 (4) Cleans up the air

RS0116

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

- (1) $\text{TV} + \text{IRV}$
 (2) $\text{TV} + \text{IRV} + \text{ERV}$
 (3) $\text{TV} + \text{ERV}$
 (4) $\text{TV} + \text{IRV} + \text{ERV} + \text{RV}$

RS0117

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

RS0118

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

RS0119

25. The oxygen - haemoglobin dissociation curve will show a right shift in case of

- (1) High $p\text{CO}_2$
- (2) High $p\text{O}_2$
- (3) Low $p\text{CO}_2$
- (4) Less H^+ concentration

RS0120

26. Match the following and mark the correct options

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

Options:

- (1) A-ii, B-i, C-iv, D-iii
- (2) A-i, B-iv, C-ii, D-iii
- (3) A-i, B-iii, C-ii, D-iv
- (4) A-i, B-ii, C-i.v, D-iii

RS0121

27. 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

RS0122

28. A person suffers punctures in his chest cavity in an accident, without any damage to the lungs its effect could be :-

- (1) Reduced breathing rate
- (2) Rapid increase in breathing rate
- (3) No change in respiration
- (4) Cessation of breathing

RS0123

29. 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

RS0124

30. At which level of vertebrae of the vertebral column, trachea divides and forms bronchus?

- (1) 4th thoracic vertebrae
- (2) 5th thoracic vertebrae
- (3) 7th thoracic vertebrae
- (4) 3rd thoracic vertebrae

RS0125

EXERCISE-III(B) (ANALYTICAL QUESTIONS)

31. 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

RS0126

- 32.** Heiring-Breuer reflex related to :-
 (1) Effect of pH on respiratory centre
 (2) Effect of CO₂ on respiratory centre
 (3) Effect of nerves on respiratory centre
 (4) Effect of temp. on respiratory center
RS0127
- 33.** Presence of large number of alveoli around alveolar ducts opening into bronchioles in mammalian lungs is :-
 (1) Inefficient system of ventilation with little of residual air
 (2) Inefficient system of ventilation with high percentage of residual air
 (3) An efficient system of ventilation with no residual air
 (4) An efficient system of ventilation with little residual air
RS0128
- 34.** The maximum volume of air a person can breathe in after a forced expiration is :-
 (1) TV + ERV (2) TV + IRV
 (3) TV + ERV + IRV (4) ERV + RV
RS0129
- 35.** How many animals in the given list have gills for respiration ?
 Earthworm, Frog, Fish, Insects, Reptiles, Aquatic arthropods, Flatworm, Molluscs, Birds
 (1) Six (2) Four (3) Three (4) Five
RS0130
- 36.** In Lungs there is definite exchange of ions between RBC and Plasma. Removal of CO₂ from blood involves –
 (1) efflux of Cl^o ions from RBC
 (2) influx of Cl^o ions into RBC.
 (3) influx of HCO₃^o ions into Plasma.
 (4) efflux of HCO₃^o ions from RBC.
RS0131
- 37.** 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
RS0132
- 38.** 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
RS0133
- 39.** What happens in **Hamburger shift** ?
 (1) HCO₃⁻ ions move out from the RBC and Cl⁻ ions enters into RBC
 (2) Cl⁻ ions move out from the RBC and HCO₃⁻ ions enters into RBC
 (3) H⁺ ions move out from the plasma and Cl⁻ ions enters into RBC
 (4) HCO₃⁻ ions move out from the plasma and Cl⁻ ions enters into plasma
RS0134
- 40.** 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 100 mm Hg respectively
 (2) Partial pressure of oxygen in alveolar air and capillaries is 100 mm Hg and 40 mm Hg respectively
 (3) Partial pressure of oxygen in alveolar air and capillaries is 46 mm Hg and 40mm Hg respectively
 (4) Partial pressure of oxygen in alveolar air and capillaries it 40 mm Hg and 46 mm Hg respectively
RS0135
- 41.** Blood do not become acidic although it carries CO₂ because :-
 (1) CO₂ is continuously diffused through tissues
 (2) CO₂ combines with H₂O to form HCO₃
 (3) In CO₂ transport, buffers plays an important role
 (4) CO₂ is absorbed by WBC
RS0136

42. Effect of 2,3-DPG on the human blood is that :-

- (1) It increases the affinity of O_2 for haemoglobin
- (2) It decreases the affinity of O_2 for haemoglobin
- (3) It increases association of Hb and O_2 .
- (4) It decreases the value of P_{50}

RS0137

43. 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

RS0138

44. 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)

RS0139

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

- A = Terminal bronchiole
B = Respiratory bronchiole
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

RS0140

46. 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

RS0141

47. 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)

RS0142

48. 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 (VQ)	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)

RS0143

49. 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_2 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_2 activates dissociation of oxyhaemoglobin is called Bohr's effect.

RS0144

50. Find out the **correct** match from the following :-

- (i) **Larynx** – sound box
(ii) **Trachea** – complete cartilagenous rings
(iii) **Epiglottis** – elastic cartilagenous flap

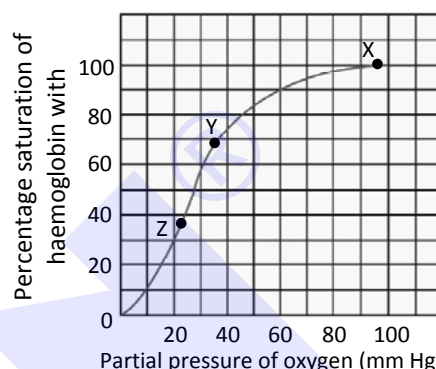
(iv) **Alveoli** – very thin, irregular walled, vascularised bag like structures

(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)

RS0145

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



Where in the body will haemoglobin be saturation 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

RS0146

EXERCISE-III

ANSWER KEY

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