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NEET BREATHING AND EXCHANGE OF GASES — PYQS

Max. Marks: 196 **Questions:** 49

Section A (MCQ) — 49 questions

Q.1 Match **List I** with **List II** : [NEET (UG) 2026]

List-I		List-II	
A.	Molluscs	I.	Pulmonary respiration only
B.	Reptiles	II.	Branchial respiration
C.	Adult amphibians	III.	Cellular respiration
D.	Amoeba	IV.	Pulmonary and cutaneous respiration

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

Solution

Q.2 In humans, respiration occurs in the following steps. Arrange these steps in the correct order.
A. Diffusion of O_2 and CO_2 between blood and tissues
B. Diffusion of O_2 and CO_2 across alveolar membrane
C. Pulmonary ventilation by which atmospheric air is drawn in and CO_2 rich alveolar air is released out
D. Cellular respiration
E. Transport of gases by the blood
Choose the correct answer from the options given below : [NEET (UG) 2026]
(1) A, B, C, D, E (2) C, A, B, E, D
(3) C, B, E, A, D (4) E, A, C, D, B

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Q.3 Match **List-I** with **List-II**. [NEET (UG) 2026]

List-I (Respiratory Volume)		List-II (Capacity in mL)	
A.	ERV (Expiratory Reserve Volume)	I.	2500–3000 mL
B.	RV (Residual Volume)	II.	500 mL
C.	IRV (Inspiratory Reserve Volume)	III.	1000–1100 mL
D.	TV (Tidal Volume)	IV.	1100–1200 mL

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

Solution

Q.4 Sponges exchange O_2 with CO_2 by _____. [RE-NEET (UG) 2026]
(1) gills
(2) simple diffusion over their entire body surfaces
(3) moist cuticle
(4) tracheal tubes

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Q.5 Match **List-I** with **List-II**

List - I		List - II	
A.	Emphysema	I.	Rapid spasms in muscle due to low Ca^{++} in body fluid
B.	Angina Pectoris	II.	Damaged alveolar walls and decreased respiratory surface
C.	Glomerulonephritis	III.	Acute chest pain when not enough oxygen is reaching to heart muscle
D.	Tetany	IV.	Inflammation of glomeruli of kidney

Choose the correct answer from the options given below : [NEET (UG) 2025]
(1) A-II, B-IV, C-III, D-I
(2) A-II, B-III, C-IV, D-I
(3) A-III, B-I, C-IV, D-II
(4) A-III, B-I, C-II, D-IV

Solution

Q.6 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 : [NEET (UG) 2024]

(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

Solution

Q.7 Which of the following factors are favourable for the formation of oxyhaemoglobin in alveoli? [NEET (UG) 2024]

(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

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Q.8 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: [RE-NEET (UG) 2024]

(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

Solution

Q.9 Given below are two statements: One is labelled as **Assertion A** and the other is labelled as **Reason R**.
Assertion (A): During the transportation of gases, about 20-25 percent of CO_2 is carried by Haemoglobin as carbamino-haemoglobin.
Reason (R): This binding is related to high pCO_2 and low pO_2 in tissues.

In the light of the above statements, choose the correct answer from the options given below. [RE-NEET (UG) 2024]

(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

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Q.10 Vital capacity of lung is _____. [NEET (UG) 2023]

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

Solution

Q.11 Under normal physiological conditions in human beings every 100 ml of oxygenated blood can deliver _____ ml of O_2 to the tissues. [NEET (UG) 2022]

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

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Q.12 Which of the following is not the function of conducting part of respiratory system? [NEET (UG) 2022]

(1) It clears inhaled air from foreign particles
(2) Inhaled air is humidified
(3) Temperature of inhaled air is brought to body temperature
(4) Provides surface for diffusion of O_2 and CO_2

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Q.13 Identify the region of human brain which has pneumotaxic centre that alters respiratory rate by reducing the duration of inspiration. [NEET (UG) 2022 (Phase 2)]

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

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Q.14 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 breathe out after a forced inspiration.
Choose the most appropriate answer from the options given below : [NEET (UG) 2022 (Phase 2)]
(1) A and E only (2) B, D and E only
(3) A, C and D only (4) A, C and E only

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Q.15 Select the favourable conditions required for the formation of oxyhaemoglobin at the alveoli. [NEET (UG) 2021]
(1) Low pO_2, low pCO_2, more H^+, higher temperature
(2) High pO_2, low pCO_2, less H^+, lower temperature
(3) Low pO_2, high pCO_2, more H^+, higher temperature
(4) High pO_2, high pCO_2, less H^+, higher temperature.

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Q.16 The partial pressures (in mm Hg) of oxygen (O_2) and carbon dioxide (CO_2) at alveoli (the site of diffusion) are : [NEET (UG) 2021]
(1) $pO_2 = 159$ and $pCO_2 = 0.3$
(2) $pO_2 = 104$ and $pCO_2 = 40$
(3) $pO_2 = 40$ and $pCO_2 = 45$
(4) $pO_2 = 95$ and $pCO_2 = 40$

Solution

Q.17 Select the correct events that occur during inspiration.
(i) Contraction of diaphragm
(ii) Contraction of external inter-costal muscles
(iii) Pulmonary volume decreases
(iv) Intra pulmonary pressure increases
[NEET (UG) 2020]
(1) Only (iv) (2) (iii) and (iv)
(3) (i), (ii) and (iv) (4) (i) and (ii)

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Q.18 Identify the wrong statement with reference to transport of oxygen. [NEET (UG) 2020]
(1) Binding of oxygen with haemoglobin is mainly related to partial pressure of O_2
(2) Partial pressure of CO_2 can interfere with O_2 binding with haemoglobin
(3) Higher H^+ conc. in alveoli favours the formation of oxyhaemoglobin
(4) Low pCO_2 in alveoli favours the formation of oxyhaemoglobin

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Q.19 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? [NEET (UG) 2019]
(1) 2200 mL (2) 2700 mL
(3) 1500 mL (4) 1700 mL

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Q.20 Due to increasing air-borne allergens and pollutants, many people in urban areas are suffering from respiratory disorder causing wheezing due to : [NEET (UG) 2019]
(1) Proliferation of fibrous tissues and damage of the alveolar walls
(2) Reduction in the secretion of surfactants by pneumocytes
(3) Benign growth on mucous lining of nasal cavity
(4) Inflammation of bronchi and bronchioles

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Q.21 Which of the following options correctly represents the lung conditions in asthma and emphysema, respectively? [NEET 2018]
(1) Decreased respiratory surface; Inflammation of bronchioles
(2) Inflammation of bronchioles; Decreased respiratory surface
(3) Increased number of bronchioles; Increased respiratory surface
(4) Increased respiratory surface; Inflammation of bronchioles

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Q.22 Match the items given in **column I** with those in **column II** and select the correct option given below. [NEET 2018]

Column I		Column II	
a.	Tidal volume	i.	2500 – 3000 mL
b.	Inspiratory reserve volume	ii.	1100 – 1200 mL

Column I		Column II	
c.	Expiratory reserve volume	iii.	500 – 550 mL
d.	Residual volume	iv.	1000 – 1100 mL

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

Solution

Q.23 Which of the following is an occupational respiratory disorder? [NEET 2018]
(1) Botulism (2) Anthracis
(3) Silicosis (4) Emphysema

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Q.24 Lungs are made up of air-filled sacs, the alveoli. They do not collapse even after forceful expiration, because of [NEET 2017]
(1) inspiratory reserve volume
(2) tidal volume
(3) expiratory reserve volume
(4) residual volume.

Solution

Q.25 Reduction in pH of blood will [NEET 2016 (Phase 1)]
(1) decrease the affinity of haemoglobin with oxygen
(2) release bicarbonate ions by the liver
(3) reduce the rate of heart beat
(4) reduce the blood supply to the brain.

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Q.26 Name the chronic respiratory disorder caused mainly by cigarette smoking. [NEET 2016 (Phase 1)]
(1) Respiratory acidosis (2) Respiratory alkalosis
(3) Emphysema (4) Asthma

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Q.27 Asthma may be attributed to [NEET 2016 (Phase 1)]
(1) inflammation of the trachea
(2) accumulation of fluid in the lungs
(3) bacterial infection of the lungs
(4) allergic reaction of the mast cells in the lungs.

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Q.28 The partial pressure of oxygen in the alveoli of the lungs is [NEET 2016 (Phase 2)]
(1) equal to that in the blood
(2) more than that in the blood
(3) less than that in the blood
(4) less than that of carbon dioxide.

Solution

Q.29 Lungs do not collapse between breaths and some air always remains in the lungs which can never be expelled because [NEET 2016 (Phase 2)]
(1) there is a negative pressure in the lungs
(2) there is a negative intrapleural pressure pulling at the lung walls
(3) there is a positive intrapleural pressure
(4) pressure in the lungs is higher than the atmospheric pressure.

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Q.30 Name the pulmonary disease in which alveolar surface area involved in gas exchange is drastically reduced due to damage in the alveolar walls. [AIPMT 2015]
(1) Pneumonia (2) Asthma
(3) Pleurisy (4) Emphysema

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Q.31 When you hold your breath, which of the following gas changes in blood would first lead to the urge to breathe? [AIPMT 2015 (Cancelled)]
(1) Falling CO_2 concentration
(2) Rising CO_2 and falling O_2 concentration
(3) Falling O_2 concentration
(4) Rising CO_2 concentration

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Q.32 Approximately seventy percent of carbon dioxide absorbed by the blood will be transported to the lungs [AIPMT 2014]
(1) as bicarbonate ions
(2) in the form of dissolved gas molecules
(3) by binding to R.B.C.
(4) as carbamino-haemoglobin.

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Q.33 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. [NEET 2013]

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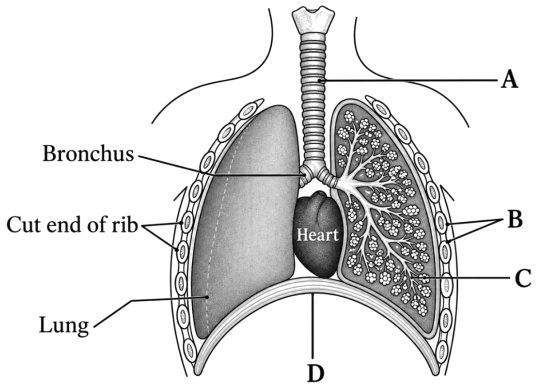

(1) A - Trachea - Long tube supported by complete cartilaginous rings for conducting inspired air.

(2) C - Alveoli - Thin walled vascular bag like structures for exchange of gases.

(3) B - Pleural membrane - Surround ribs on both sides to provide cushion against rubbing.

(4) D - Lower end of lungs - Diaphragm pulls it down during inspiration.

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Q.34 Which one of the following is the correct statement for respiration in humans? [AIPMT 2012 (Prelims)]

(1) Cigarette smoking may lead to inflammation of bronchi.

(2) Neural signals from pneumotaxic centre in pons region of brain can increase the duration of inspiration.

(3) Workers in grinding and stone-breaking industries may suffer from lung fibrosis.

(4) About 90% of carbon dioxide (CO_2) is carried by haemoglobin as carbamino-haemoglobin.

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Q.35 Which one of the following is a possibility for most of us in regard to breathing, by making a conscious effort? [AIPMT 2011 (Mains)]

(1) One can breathe out air totally without oxygen.

(2) One can breathe out air through Eustachian tube by closing both nose and mouth.

(3) One can consciously breathe in and breathe out by moving the diaphragm alone, without moving the ribs at all.

(4) The lungs can be made fully empty by forcefully breathing out all air from them.

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Q.36 Bulk of carbon dioxide (CO_2) released from body tissues into the blood is present as [AIPMT 2011 (Mains)]

(1) bicarbonate in blood plasma and RBCs

(2) free CO_2 in blood plasma

(3) 70% carbamino-haemoglobin and 30% as bicarbonate

(4) carbamino-haemoglobin in RBCs.

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Q.37 A large proportion of oxygen remains unused in the human blood even after its uptake by the body tissues. This O_2 [AIPMT 2011 (Prelims)]

(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.

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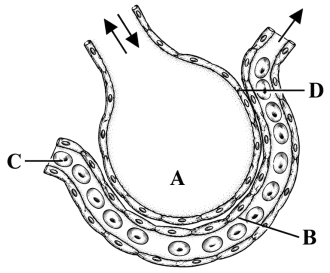
Q.38 The figure given below shows a small part of human lung where exchange of gases takes place. Select the option which represents labelled part (A, B, C or D) correctly identified along with its function. [AIPMT 2011 (Prelims)]



(1) D : capillary wall - exchange of O_2 and CO_2 takes place here

(2) B : red blood cells - transport of CO_2 mainly.

(3) A : alveolar cavity - main site of exchange of respiratory gases

(4) C : arterial capillary - passes oxygen to tissues

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Q.39 Listed below are four respiratory capacities (i – iv) and four jumbled respiratory volumes of a normal human adult.

	Respiratory capacities	Respiratory volumes
(i)	Residual volume	2500 mL
(ii)	Vital capacity	3500 mL
(iii)	Inspiratory reserve volume	1200 mL
(iv)	Inspiratory capacity	4500 mL

Which one of the following is the correct matching of two capacities and volumes? [AIPMT 2010 (Prelims)]

(1) (ii) 2500 mL, (iii) 4500 mL

(2) (iii) 1200 mL, (iv) 2500 mL

(3) (iv) 3500 mL, (i) 1200 mL

(4) (i) 4500 mL, (ii) 3500 mL

Solution

Q.40 What is true about RBCs in humans? [AIPMT 2010 (Prelims)]

(1) They carry about 20-25 percent of CO_2.
(2) They transport 99.5 percent of O_2.
(3) They transport about 80 percent oxygen only and the rest 20 percent of it is transported in dissolved state in blood plasma.
(4) They do not carry CO_2 at all.

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Q.41 Which two of the following changes (i – iv) usually tend to occur in the plain dwellers when they move to high altitudes (3,500 m or more)?

(i) Increase in red blood cell size
(ii) Increase in red blood cell production
(iii) Increased breathing rate
(iv) Increase in thrombocyte count

Changes occurring are [AIPMT 2010 (Prelims)]

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

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Q.42 What is vital capacity of our lungs? [AIPMT 2009]

(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

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Q.43 The haemoglobin of a human foetus [AIPMT 2009]

(1) has only 2 protein subunits instead of 4
(2) has a higher affinity for oxygen than that of an adult
(3) has a lower affinity for oxygen than that of the adult
(4) its affinity for oxygen is the same as that of an adult.

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Q.44 The majority of carbon dioxide produced by our body cells is transported to the lungs as [AIPMT 2006]

(1) attached to haemoglobin
(2) dissolved in the blood
(3) bicarbonates
(4) carbonates.

Solution

Q.45 Which one of the following statements is incorrect? [AIPMT 2006]

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

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Q.46 People living at sea level have around 5 million RBC per cubic millimetre of their blood whereas those living at an altitude of 5400 metres have around 8 million. This is because at high altitude [AIPMT 2006]

(1) people eat more nutritive food, therefore more RBCs are formed
(2) people get pollution-free air to breathe and more oxygen is available
(3) atmospheric O_2 level is less and hence more RBCs are needed to absorb the required amount of O_2 to survive
(4) there is more UV radiation which enhances RBC production.

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Q.47 Blood analysis of a patient reveals an unusually high quantity of carboxyhaemoglobin content. Which of the following conclusions is most likely to be correct?

The patient has been inhaling polluted air containing unusually high content of [AIPMT 2004]

(1) carbon disulphide (2) chloroform
(3) carbon dioxide (4) carbon monoxide.

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Q.48 When CO_2 concentration in blood increases breathing becomes [AIPMT 2004]

(1) shallower and slow
(2) there is no effect on breathing
(3) slow and deep
(4) faster and deeper

Solution

Q.49 Given below are four matchings of an animal and its kind of respiratory organ:

A. Silver fish – Trachea
B. Scorpion – Book lung
C. Sea squirt – Pharyngeal slits
D. Dolphin – Skin

The correct matchings are [AIPMT 2003]

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

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ANSWER KEY

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

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