Chapter – 6

Respiration

Multiple Choice Questions

Question 1.

Breathing is controlled by

- (a) cerebrum
- (b) medulla oblongata
- (c) cerebellum
- (d) pons

Answer: (b) medulla oblongata

Question 2.

- (a) vertebral column
- (b) sternum
- (c) ribs
- (d) glottis

Answer:

(c) ribs

Question 3.

The respiratory structures of insects are (a) tracheal tubes (b) gills (c) green glands (d) lungs

Answer:

(a) tracheal tubes

Question 4.

Asthma is caused due to

(a) bleeding in pleural cavity.

(b) infection of nose

(c) damage of diaphragm.

(d) infection of lungs

Answer:

(d) infection of lungs

Question 5.

The Oxygen Dissociation Curve is

(a) sigmoid

(b) straight line

(c) curved

(d) rectangular hyperbola

Answer:

(a) sigmoid

Question 6.

The Tidal Volume of a normal person is (a) 800 mL (b) 1200 mL (c) 500 mL (d) 1100- 1200 mL **Answer:** (c) 500 mL

Question 7. During inspiration, the diaphragm (a) expands (b) unchanged (c) relaxes to become dome-shaped (d) contracts and flattens

Answer:

(d) contracts and flattens

Question 8.

 CO_2 is transported through blood to lungs as

(a) carbonic acid

- (b) oxyhaemoglobin
- (c) carbamino haemoglobin

(d) carboxy haemoglobin

Answer:

(c) carbamino haemoglobin

Question 9.

When 1500 mL air is in the lungs, it is called

- (a) vital capacity
- (b) tidal volume
- (c) residual volume
- (d) inspiratory reserve volume

Answer:

(b) tidal volume

Question 10.

Vital capacity is (a) TV + IRV (b) TV + ERV (c) RV + ERV (d) TV + TRV + ERV

Answer:

(d) TV + TRV + ERV

Question 11.

After a long deep breath, we do not respire for some seconds due to (a) more CO_2 in the blood (b) more O_2 in the blood (c) less CO_2 in the blood (d) less CL in the blood

Answer:

(b) more O_2 in the blood

Question 12.

Which of the following substances in tobacco smoke damage the gas exchange system?

- (a) carbon monoxide and carcinogens
- (b) carbon monoxide and nicotine
- (c) carcinogens and tar
- (d) nicotine and tar

Answer:

(d) nicotine and tar

Question 13.

Column I represents diseases and column II represents their symptoms. Choose the correctly paired option

Column I	Column II	
(P) Asthma	(i) Recurring of bronchitis	
(Q) Emphysema	(ii) Accumulation of WBCs in alveolus	
(R) Pneumonia	(iii) Allergy	
(a) $P = iii, 0 = ii, R = i$		

(a) P = in, Q = i, R = i(b) P = iii, Q = i, R = ii(c) P = ii, Q = iii, R = i(d) P = ii, Q = i, R = iii

Answer:

(a) P = iii, Q = ii, R = i

Question 14.

Which of the following best describes the process of gas exchange in the lungs?

(a) Air moves in and out of the alveoli during breathing.

(b) Carbon dioxide diffuses from deoxygenated blood in capillaries into the alveolar air.

(c) Oxygen and carbon dioxide diffuse down their concentration gradients

between blood and alveolar air.

(d) Oxygen diffuses from alveolar air into deoxygenated blood.

Answer:

(c) Oxygen and carbon dioxide diffuse down their concentration gradients between blood and alveolar air.

Question 15.

Make the correct pairs.

Column I	Column II	
(P) IC	i. maximum volume of air breathe in after forced.	
(Q) EC	ii. Volume of air present after expiration in lungs.	
(R) VC	iii. Volume of air inhaled after expiration.	
(S) FRC	iv. Volume of air present after expiration in lungs.	
(a) P – i, Q – ii, R – iii, S – iv		
(b) P – ii, Q – iii, R – iv, S – i		
(c) P – ii, Q – iii, R – i, S – iv		
(d) P – iii, Q – iv, R – i, S – ii		

Answer:

(d) P – iii, Q – iv, R – i, S – ii

Question 15.

Make the correct pairs.

Column I	Column II
(P) Tidal volume	i. 1000 to 1100 ml
(Q) Residual volume	ii. 500 ml
(R) Expiratory reserve volume	iii. 2500 to 3000 ml
(S) Inspiratory reserve volume	iv. 1100 to 1200 ml

(a) P - ii, Q - iv, R - i, S - iii
(b) P - iii. Q - ii, R - iv, S - i
(c) P - ii, Q - iv, R - iii, S - i
(d) P - iii, Q - iv, R - i, S - ii

Answer:

(a) P – ii, Q – iv, R – i, S – iii

II. Very Short Answer Questions

Question 17.

Name the respiratory organs of flatworm, earthworm, fish, prawn, cockroach, and cat.

Answer:

Flatworm – Body surface Earthworm – Body wall Fish -Gills Prawn -Gills Cockroach -Trachea Cat -Lungs

Question 18.

Name the enzyme that catalyses the bicarbonate formation in RBCs.

Answer:

Carbonic anhydrase.

Question 19.

Air moving from the nose to the trachea passes through a number of structures. List in order of the structures.

Answer:	
External	nostrils
1	
nasal cav ↓	vity
Pharynx ↓	
Trachea	

Question 20.

Which structure seals the larynx when we swallow?

Answer:

Epiglottis.

Question 21.

Resistance in the airways is typically low. Why? Give two reasons.

Answer:

- 1. As the cartilaginous rings present in the trachea provide an easy way for air. The bronchi have 'C' shaped curved cartilage plates to ensure that the air passage does not collapse.
- 2. The rigidity of bronchioles prevents them from collapsing. Thus the air reaches the lungs without any disturbances.

Question 22.

How the body makes long-term adjustments when living in high altitude?

Answer:

When a person lives at a higher altitude, the body makes respiratory and hematopoietic adjustments. Kidneys accelerate the production of the hormone erythropoietin which stimulates the bone marrow to produce more RBCs. This improves the binding of 02 with hemoglobin.

Question 23.

Diffusion of gases occurs in the alveolar region only and not in any other part

of the respiratory system. Discuss.

Answer:

The alveolar region is highly vascular. Each alveolus is made up of highly permeable and thin layers of squamous epithelial cells. The barrier between the alveoli and the capillaries is thin and diffusion of gases takes place from higher partial pressure to low er partial pressure. Hence, gaseous exchange takes place in the aboral region only but not in any other part of the respiratory system.

Question 24.

Sketch a flow chart to show the pathway of airflow during respiration.

Answer: Atmosphere ↓↑ External nostrils $\downarrow\uparrow$ Nasal cavity $\downarrow\uparrow$ Pharynx J↑ Larynx 11 Trachea 11 Bronchi J↑ Bronchioles ↓↑ Lungs $\underbrace{\overset{O_2}{\leftarrow} O_2}$ Blood

Question 25. Why is pneumonia considered a dangerous disease?

Answer:

Inflammation of the lungs due to infection caused by bacteria or viruses is called pneumonia. The symptoms are sputum production, nasal congestion, shortness of breath, sore throat, etc. The alveoli get filled with fluid or pus, making it difficult to breathe (lung abscesses).

Question 26.

Explain the conditions which creates problems in oxygen transport.

Answer:

When a person travels from sea level to elevations above 8000 feet where the atmospheric pressure and partial pressure of O_2 are lowered, he will have symptoms of acute mountain sickness, headache, shortness of breath nausea, and dizziness due to poor binding of O_2 with haemoglobin.

- When a person descends deep into the sea the pressure in the surrounding water increases which causes the lungs to decrease in volume.
- It leads to keep more oxygen in the circulation.
- But that leads to an increase in blood nitrogen leads to nitrogen narcosis.
- When he ascends to the surface he will suffer from a condition called bends.
- Large bubbles can lodge in small capillaries blocking blood flow or can press on nerve endings.
- Symptom: Pain in joints and muscles, Stroke.