

Respiratory MCQs

1. Which of these statements is correct?
 - a. Regular bronchioles are the most distal part of the respiratory tract to contain glands.
 - b. Larynx do contain significant amounts of smooth muscle
 - c. Goblet cells are abundant in the small bronchi and respiratory bronchioles
 - d. Regular bronchioles contain simple cuboidal cells
 - e. Elastic fibres are more abundant in the bronchi and bronchioles than the upper respiratory tract.

2. Spirometry can measure all except
 - a. IC
 - b. ERV
 - c. FRC
 - d. Vital capacity
 - e. TV

3. Which statement is false about anatomical dead space?
 - a. Anatomical dead space varies with age
 - b. Can be estimated by the Fowlers method
 - c. Significantly large in shallow breathing
 - d. Measured by plotting N₂ concentration against expired volume as in Bohr's method
 - e. Estimated at around 150ml in a 75kg man with TV 500ml

4. Which of these does not affect diffusion rate?
 - a. Surface area for diffusion
 - b. Concentration gradient
 - c. Solubility of gas
 - d. Molecular weight of gas
 - e. Thickness

5. Which of these statements is false regarding Pulmonary Resistance?
 - a. Increase in pulmonary arterial pressure generally cause a fall in pulmonary resistance
 - b. Pulmonary resistance is only 1/10 of systemic circulation resistance
 - c. Increase of lung volume results in increase of resistance in extra alveolar vessels
 - d. Acetylcholine has a good bronchiole smooth muscle relaxation effect
 - e. Resistance in pulmonary capillaries increases at large lung volumes

6. When CO₂ diffuses into blood in systemic capillaries most of it:
 - a. Remains in solution as CO₂
 - b. Converts to carbamino compounds
 - c. Converts to bicarbonate ions in RBC
 - d. Combines with Hb directly
 - e. Combines with H₂O in plasma to form carbonic acid

7. Identify the inconsistent value at sea level
 - a. Alveolar pCO₂ = 40mmHg
 - b. Alveolar pO₂ = 100mmHg
 - c. Alveolar PH₂O = 47mmHg
 - d. Alveolar PN₂ = 573mmHg
 - e. pO₂ of inspired air = 130mmHg

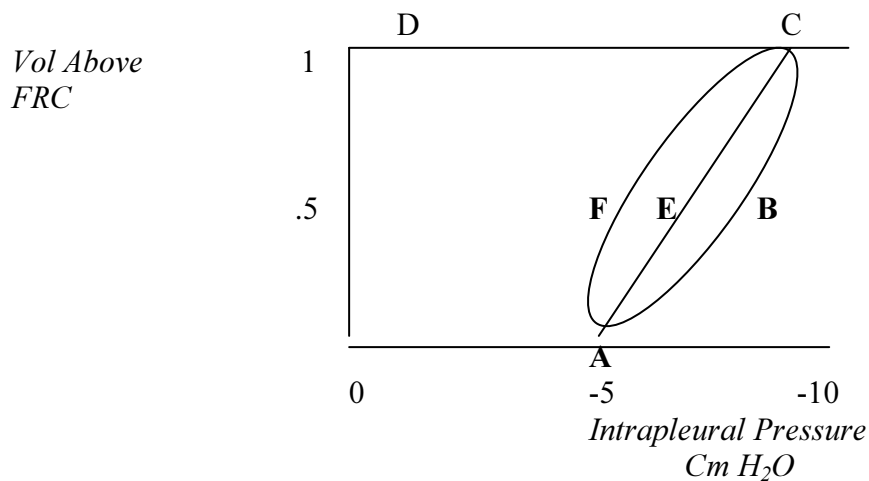
8. Identify the inconsistent value in these measurements on a mixed venous blood sample obtained in a healthy person from IVC at sea level
 - a. pO₂ = 40mmHg
 - b. pCO₂ = 48mmHg
 - c. PN₂ = 620mmHg
 - d. O₂ content = 150ml/L blood
 - e. CO₂ content = 540ml/L blood

9. After inspiration commences the:
 - a. Intrapleural pressure and intrapulmonary P both fall
 - b. Intrapleural pressure falls and intrapulmonary P rises
 - c. Intrapleural pressure falls and venous return decreases
 - d. Intrapulmonary pressure rises and volume of the alveoli is momentarily unchanged
 - e. Intrapleural pressure rises and venous return to heart decreases

10. Which one is not correct? A patient suffering from anaemia with an Hb concentration of 5g/100ml
 - a. Decreased TPR
 - b. Increased cardiac output
 - c. Increased 2, 3 DPG in RBC
 - d. P_aO₂ will be decreased
 - e. O₂ dissociation curve will be moved to right in peripheral capillaries

11. O₂ dissociation curve shift to R) by all of the following except
 - a. Increase [H⁺]
 - b. pCO₂
 - c. Increase temperature
 - d. Carbon monoxide

- e. 2, 3, DPG
12. All of these statements about surfactant are true except
- Promote stability of alveoli
 - Reduce surface tension of alveoli
 - Larger alveoli have lower surface tension than small alveoli according to Laplace law
 - Assist in avoiding transudation of fluid into capillary
 - Produced by Type II pneumocytes
13. Which statement is false?
- Dorsal respiratory group in upper pons is responsible for inspiration
 - Apneustic centre can inhibit the inspiratory centre
 - Pneumotaxic centre is responsible for prolonged inspiratory gasp interrupted by transient expiratory efforts
 - Intrinsic periodic firing of inspiratory phase comes from the cortex that can be voluntarily over-ridden
 - None of the above
- 14.



Which area represents the work to overcome airway resistance?

- ABCEA
 - ABCFA
 - AECFA
 - ABCDOA
 - OAFCD
15. A man with normal lungs and arterial pCO₂ of 40mmHg takes an overdose of barbiturates, which half his ventilation but don't change his CO₂ output. What does his arterial pCO₂ rise to?
- 50
 - 60

- c. 70
- d. 80
- e. 90

16. If his $R = 0.8$ how much will his arterial pO_2 fall?

- a. 85mmHg
- b. 75mmHg
- c. 60mmHg
- d. 50mmHg
- e. 45mmHg

17. How much does the inspired O_2 concentration have to be raised to abolish the hypoxaemia?

- a. 5%
- b. 7%
- c. 10%
- d. 15%
- e. 20%

Answers

1. e
2. c
3. 3
4. none of the above
5. c
6. c
7. e
8. c
9. a
10. d
11. d
12. c
13. e
14. c
15. d
16. d
17. b

Physiology MCQs: July 2nd Respiratory

1. Regarding the lung
 - a. There are about 300 million alveoli in the human lung
 - b. The terminal bronchioles are the smallest airways without alveoli
 - c. Anatomic dead space = 150 ml
 - d. Alveoli are about 0.3 mm in diameter
 - e. All of the above are true

2. All of the following pairings are correct (assuming normal person at rest) EXCEPT

- a. Tidal volume = 500 ml
 - b. Alveolar ventilation = 7500 ml
 - c. Pulmonary blood flow = 5000 ml/min
 - d. Functional residual capacity = volume of gas in lung after normal expiration
 - e. Physiologic dead space = 150 ml
3. Which of the following substances is activated by passage through the pulmonary circulation?
- a. Bradykinin
 - b. Serotonin
 - c. Noradrenaline
 - d. Angiotensin 1
 - e. Vasopressin
4. All of the following shift the oxygen dissociation curve to the right EXCEPT
- a. Decreased pH
 - b. Increased temperature
 - c. Carbon monoxide
 - d. Increased 2,3 DPG
 - e. Increased pCO₂
5. This blood gas picture reveals which of the following?
 PH = 7.52, pCO₂ = 20 mmHg, pO₂ = 120 mmHg, bicarb = 16 mmol/l
- a. Metabolic alkalosis
 - b. Respiratory alkalosis with partial renal compensation
 - c. Metabolic acidosis
 - d. Respiratory acidosis
 - e. Mixed respiratory/metabolic alkalosis
6. All of the following states decrease lung compliance EXCEPT
- a. Lung fibrosis
 - b. Increased pulmonary venous pressure
 - c. Long period of time where the lung is unventilated
 - d. Emphysema
 - e. Alveolar oedema
7. Regarding airway resistance
- a. The Poiseuille equation denotes pressure volume characteristics for turbulent flow
 - b. The very small bronchioles are the major site of resistance to airflow
 - c. Decreased pCO₂ in alveolar gas causes an increase in airway resistance
 - d. As lung volume reduces, airway resistance reduces also
 - e. Contraction of bronchial smooth muscle by stimulation of adrenergic receptors increases airway resistance
8. Regarding control of ventilation
- a. The apneustic centre lies in the medulla
 - b. The central chemoreceptors respond to changes in oxygen concentrations
 - c. The chemoreceptors in the aortic bodies respond to a fall in arterial pH
 - d. Peripheral chemoreceptors respond to decreases in arterial pO₂
 - e. The most important factor in control of ventilation under normal conditions is the pO₂ of the arterial blood
9. Alveolar ventilation in a male with a respiratory rate of 10/min and tidal volume of 600 ml is
- a. 1000ml
 - b. 1750 ml
 - c. 3000ml

- d. 4500ml
 - e. 6000ml
10. At high altitudes all of the following things occur in an effort to acclimatise EXCEPT
- a. Hypoventilation
 - b. Polycythaemia
 - c. Increased numbers of capillaries per unit volume in peripheral tissues
 - d. O₂ dissociation curve shifts to right
 - e. Pulmonary vasoconstriction
11. With respect to regional gas exchange in the upright lung
- a. Ventilation is greater at the top of the lungs
 - b. Perfusion is much greater at the top of the lungs compared with the bases
 - c. Ventilation/perfusion ratio is abnormally high at the top of the lungs
 - d. PO₂ is highest at the bases of the lungs
 - e. PH is highest at the bases of the lungs
12. Regarding ventilation
- a. Normal FEV₁ is 70% of FVC
 - b. FEV₁ is decreased much more than FVC in patients with lung fibrosis
 - c. FEV₁ is dependent on expiratory effort
 - d. FVC in an average healthy person is about 3100 ml
 - e. FEV₁ is about 42% of FVC in a patient with obstructive lung disease
13. You are up very high where barometric pressure is 447 mmHg. What is the partial pressure of oxygen in the air up there?
- a. 0.5 mmHg
 - b. 40 mmHg
 - c. 80 mmHg
 - d. 120 mmHg
 - e. 150 mmHg
14. Regarding oxygen transport
- a. The predominant way oxygen is transported in the blood is as dissolved oxygen
 - b. 1 gram of pure Hb can combine with 1.34 - 1.39 ml of oxygen
 - c. An anaemic patient has a lowered arterial pO₂ because the Hb is low
 - d. CO₂ is 200 times more soluble than oxygen
 - e. The CO₂ dissociation curve is less steep than that of oxygen

Answers:

- 1. E
- 2. B
- 3. D
- 4. C
- 5. B
- 6. D
- 7. C
- 8. D
- 9. D
- 10. A
- 11. C
- 12. E
- 13. C

14. B