

1. Most of the carbon dioxide is transported to the lungs in the following form:

- a. dissolved CO_2
- *b. HCO_3^-
- c. H_2CO_3
- d. combined with hemoglobin

2. The Henderson-Hasselbalch equation allows the RT to calculate:

- *a. PH, as long as HCO_3^- and PaCO_2 are known
- b. H_2CO_3 as long as H^+ and CO_2 are known
- c. PAO_2 based on FiO_2 , barometric pressure and a constant
- d. Ventilator changes based on H_2CO_3 , PaCO_2 , and PH

3. Hemoglobin's affinity for carbon monoxide is approximately how many times greater than its affinity for oxygen?

- a. 150 - 200
- b. 80 - 100
- *c. 200 - 250
- d. 320 - 400

4. Calculate PAO_2 based on the following information:

$\text{FIO}_2 = 80\%$

$\text{BP} = 760 \text{ mm Hg}$

$\text{PaCO}_2 = 55 \text{ mm Hg}$

$\text{HCO}_3^- = 24 \text{ mEq/L}$

$\text{PH} = 7.30$

- a. 465 mm Hg
- *b. 502 mm Hg
- c. 600 mm Hg
- d. 583 mm Hg

5. Interpret the following arterial blood gas:

pH 7.44
 PaCO₂ 26 mmHg
 HCO₃⁻ 17 mEq/l
 PaO₂ 53 mmHg

- *a. fully compensated respiratory alkalosis
- b. fully compensated metabolic acidosis
- c. uncompensated metabolic alkalosis
- d. uncompensated respiratory acidosis

6. Excess anticoagulant may cause which of the following preanalytical errors?

- a. Increases PCO₂
- b. Decreases PH
- *c. Decreased PCO₂
- d. Increase hematocrit

7. Rationale behind the radial artery being the site of choice for arterial puncture includes:

- a. it is a large artery, as is the femoral artery
- *b. it is easy to locate because it is close to the surface of the skin

- c. it is easy to palpate and you can visualize it
- d. the superficial palmar arch is supplied by the radial artery

8. As venous blood enters the alveolar capillaries, the following chemical reactions occur:

1. Cl^- leaves the RBC
2. the HCO_3^- level in the plasma increases
3. HCO_3^- enters the RBC
4. dissolved CO_2 enters the alveolus

- a. 2
- b. 3
- *c. 1, 3 and 4
- d. 1, 2 and 3

9. Factors which influence the oxygen dissociation curve to shift to the left are:

- *a. metabolic alkalosis
- b. respiratory acidosis
- c. hyperthermia
- d. cardiac arrest

10. Which of the following statements are not true?

- a. Increased 2,3-DPG concentration promotes oxygen unloading
- b. A COPD patient with chronic hypoxemia will have an increased 2,3-DPG concentration
- c. A patient with nitrite poisoning will have high carboxyhemoglobin concentration
- *d. Normal P_{50} is 36.6 mmHg at a pH level of 7.40

11. Normal P(A-a) O₂ gradient is:

- a. 2 - 15
- b. 4 - 10
- *c. 5 - 20
- d. 20 - 40
- e. 0 - 5

12. Presence of high levels of FHb in co-oximetry may cause problems in measurement errors, such as:

- a. falsely high total Hb
- b. falsely low total Hb
- *c. falsely high HbCO
- d. falsely low HbO₂

13. Which of the following factors affecting the accuracy of a pulse oximeter will cause the potential error of showing falsely low % of HbO₂?

- a. presence of HbCO
- *b. anemia
- c. nail polish
- d. ambient light

14. Blood buffers are classified into two buffer systems. Which statements are true regarding these systems?

- a. the bicarbonate system is a closed buffer system
- b. the nonbicarbonate system is an open system

- *c. the nonbicarbonate system consists mainly of phosphates and proteins
- d. the bicarbonate system consists of HCl and H⁺

15. The normal anion gap range is:

- a. 4 - 10 mEq/L
- b. 4 - 9 mEq/L
- c. 8 - 24 mEq/L
- *d. 9 - 14 mEq/L