



## Buffer System

1- When a patient has PH changes first line of defense will be the physiological buffer system, if it's not enough the chemical buffer system will take place?

- A. *True.*
- B. *False.*

2- Since  $[H_2CO_3]$  very low, that's make it?

- A. *Easily to estimate.*
- B. *Difficult to measure.*
- C. *Ineffective on the equation.*
- D. *Need to replace it with other component.*
- E. *Both B & D.*

3- Increase alveolar ventilation decreases what?

- A. *Intracellular Fluid  $H^+$  Concentration and Lowers pH.*
- B. *Intracellular Fluid  $CO_2$  Concentration and Raises pH.*
- C. *Extracellular Fluid  $H^+$  Concentration and Raises pH.*
- D. *Extracellular Fluid  $CO_2$  Concentration and Lowers pH.*
- E. *None of the above.*

4- All of the following are chemical buffers system, except?

- A. *Phosphate.*
- B. *Bicarbonate.*
- C. *Respiratory.*
- D. *Protein.*
- E. *Bone.*

5- Bicarbonate found normally in the blood with conc. of?

- A. *23 mEq/L.*
- B. *~ 24 mEq/L.*
- C. *27 mEq/L.*
- D. *37 mEq/L.*
- E. *47 mEq/L.*

6- Phosphate buffer system does not have much effect as intracellular fluid buffer. However, it's a major extracellular buffer and important in renal tubular fluid?

- A. *True.*
- B. *False.*

7- What is the correct sequence of events?

- A. Conversion of  $H_2CO_3$  to  $CO_2$  and  $H_2O$ .
- B. Conversion of  $HCO_3^-$  to  $H_2CO_3$ .
- C. Bind of  $H^+$  with  $HCO_3^-$ .
- D. All of the above.
- E. None of the above.

8- Which one of the following is the major source for production of ammonium within the proximal tubular cells?

- A. Valine.
- B. Glutamine.
- C. Tyrosine.
- D. Bicarbonate.
- E. None of the above.

9- Which condition has the highest excretion of  $NH_4^+$ ?

- A. Diabetic ketoacidosis.
- B. Diabetic mellitus.
- C. Chronic renal failure.
- D. Vomiting.
- E. None of the above.

Q- Explain the role of  $HCO_3^-$  &  $PCO_2$ , which effect PH?

## **Answers:**

Q1: B "الكيميكال بوفر سيستم هو الفيرست لاين اوف ديفنس"

Q2: E "الجوابين كلاهما صحيح لانه يصعب قياسه لذلك نقوم باستبداله بغاز آخر يمكننا قياسه"

Q3: C "عندما يزيد التنفس يقل ايون الهيدروجين فتقل الاسدي لذلك يزيد البي اتش ويصبح الكلوزز"

Q4: C "لانه من الفيسيولوجي بوفر سيستم"

Q5: B

Q6: B "العكس ليس لها تأثير كبير على الاكستراسيلولر ولكنها تلعب دورًا كبيرًا كـ إنتراسيلولر فلويد بوفر"

Q7: D "لان في البداية عندما يزيد كمية ايون الهيدروجين سيقوم بالارتباط بالبايكربونات ليكون الكاربونيك اسيد وهذا لاحقًا سيتحلل إلى ثاني اكسيد الكربون وماء"

Q8: B

Q9: C "بشكل ادق في الكرونك اسيدوزز"

Q10: "An increase in  $HCO_3^-$  concentration rising the pH, which will shift the acid-base balance toward alkalosis, an increase in  $PCO_2$  decreasing the pH, which will shift the acid-base balance toward acidosis."