

RS- Biochemistry

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Lecture 1

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1. Which value of pK_a indicates more acidity?

- A) 2
- B) -1
- C) -2
- D) -3
- E) 1

Ans:A

2. Why is bicarbonate a good buffer for organic acids?

- a) Its pK_a is suitable for blood pH.
- b) It has a high concentration in the body.
- c) It can absorb excess heat.
- d) It is soluble in lipid

Ans:A

3. which of the following is false :

- A) 20% of CO_2 is transported by carbaminoHb.
- B) 10% of CO_2 is transported as dissolved in plasma.
- C) Carbonic anhydrase has reverse direction in the lung that forms CO_2 .
- D) Alkalosis is caused by CO_2 retention.
- E) 70% of CO_2 is transported as bicarbonate ions in the blood.

Ans:D

4. which of the following are true :

- A) pH more than pK_a means the buffer is more effective
- B) pH less than pK_a means the buffer is more effective
- C) in our blood plasma acid and base concentrations are equal
- D) pH close to pK_a means the buffer is more effective

Ans:D

5. Conjugate base :

- A. HPO_4^{2-}
- B. H_2O
- C. H_3PO_4
- D. H_3O^+

Ans: A

What is the aim of hyperventilating for 10 minutes before running?

1. Respiratory acidosis
 2. Respiratory alkalosis
 3. Metabolic acidosis
 4. Metabolic alkalosis
- E) Maintain acid-base balance

Ans:B

Which of the following statements about buffers is true?

1. pH higher than pKa means the buffer is more effective.
2. pH lower than pKa means the buffer is more effective.
3. In blood plasma, acid and base concentrations are always equal.
4. pH close to pKa means the buffer is more effective.
5. Buffers are more effective when pH is far from pKa.

Ans:D



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Lecture2

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1. carboxyl group of DPG are combined with:

- A) lysin 82
- B) histidine 142
- C) lysin 2
- D) histidine 82

Ans:A

Regarding the structure of heme in myoglobin and hemoglobin, all of the following statements are correct except:

- A) Heme has a similar structure in myoglobin and hemoglobin.
- B) Heme is a complex of porphyrin and ferric iron (Fe^{**}).
- C) Porphyrins are a group of organic compounds that have four pyrrole subunits interconnected via alpha-meth-ylene bridges ($=CH-$).
- D) A pyrrole ring is a group of four carbon atoms and a nitrogen atom bound together in a ring.
- E) Heme binds oxygen through its central iron atom.

Ans:B

The carboxyl groups of 2,3-diphosphoglycerate (DPG) interact with which amino acid residues in hemoglobin?

- A) Lysine 82
- B) Histidine 142
- C) Lysine 2
- D) Histidine 82
- E) Arginine 141

Ans:A

Which of the following statements is correct?

- A) The distal histidine of myoglobin and hemoglobin is sterically repelled by the heme porphyrin ring.
- B) Cytochrome b5 reduces the ferric iron of methemoglobin.
- C) Oxyhemoglobin and deoxyhemoglobin have the same affinity for protons (H^*).
- D) Buffer effectiveness does not depend on their concentration.
- E) Maintenance of blood pH relies solely on the bicarbonate buffering system.

Ans:B

Inhibition of cytochrome - Histotoxic Hypoxia

