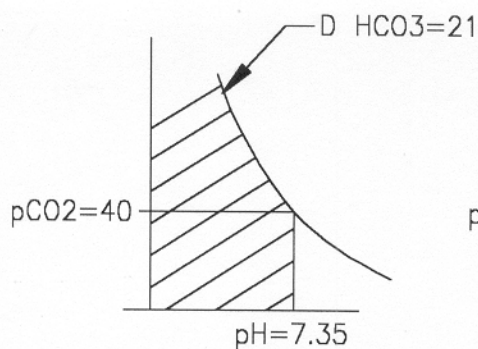
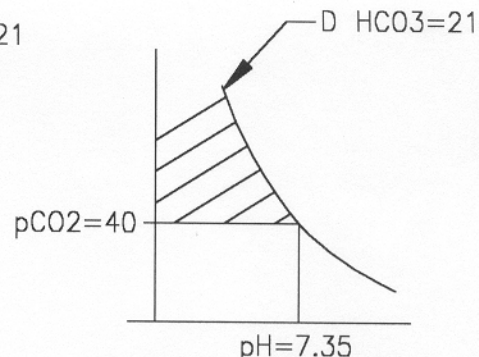


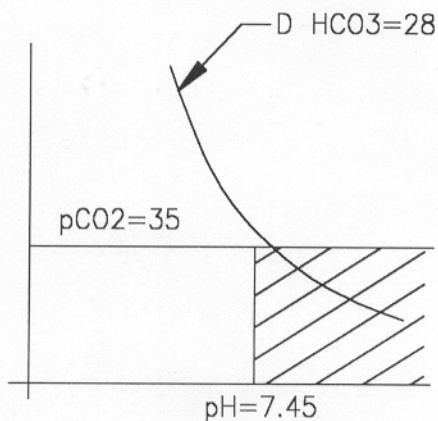
RESPIRATORY ACIDOSIS
 BLOOD pCO₂ > 40
 AND BLOOD pH < 7.35



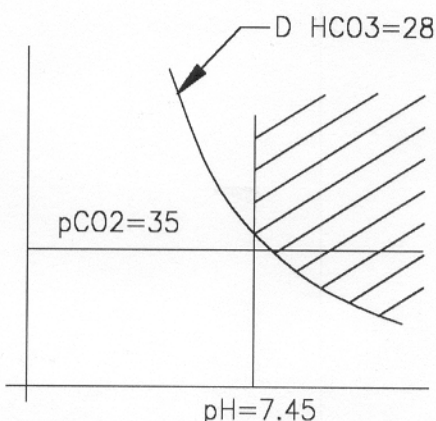
METABOLIC ACIDOSIS
 BLOOD BICARBONATE < 21
 AND BLOOD pH < 7.35



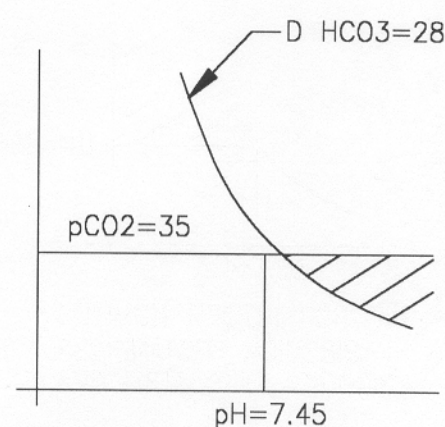
COMMON REGION FOR
 RESPIRATORY ACIDOSIS
 AND METABOLIC ACIDOSIS



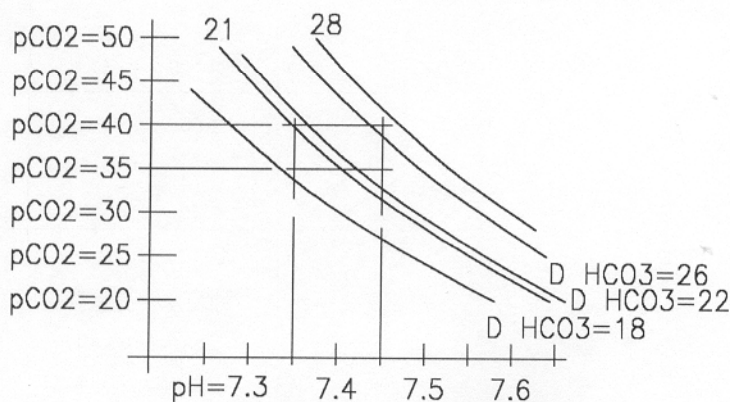
RESPIRATORY ALKALOSIS
 BLOOD pCO₂ < 35
 AND BLOOD pH > 7.45



METABOLIC ALKALOSIS
 BLOOD BICARBONATE > 28
 AND BLOOD pH > 7.45



COMMON REGION FOR
 RESPIRATORY ALKALOSIS
 AND METABOLIC ALKALOSIS



HENDERSON HASSELBALCH EQUATION FOR BLOOD
 GENERAL FORM (for pK=6.1 AND S=0.03)

$$pH = pK + \log \left[\frac{[HCO_3^-]}{(S \times PCO_2)} \right]$$

BLOOD BUFFERING

The Lungs and the Kidneys maintain hydrogen ion balance in the body. The H-H equation shows the relationship between the pH of Extracellular Fluid, Carbon Dioxide, and Bicarbonate. The body's pH needs to be about 7.4

$$pH = pK + \log \left[\frac{[HCO_3^-]}{(S \times PCO_2)} \right]$$

where pK=6.1 (dissociation constant for carbonic acid) and S=0.03 (solubility of CO₂ in plasma)

This and the equation with constants are from Acid-Base Metabolism by the International Biopharmaceutical Association www.ibpassociation.org

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Articles about J S Bach including:

1. How he wrote his music (disclosed for the first time ever)
2. The relationship between Bach's Music and the attacks
3. Examples of Bach's keyboard music, as he heard it
4. Sheet Music

Beethoven, too (What's he doing here?)

Literary and Historical Articles including:

1. How Joyce Kilmer came up with "Trees" (and you aren't going to guess)

Fire Fighting and Emergency Medical Services:

1. Calculating friction loss, flow, and nozzle reaction in the fire service
2. Solving Water Flow problems using Electric Circuit Theory
3. A simple way to predict the flow from a centrifugal pump
2. A graph of the Henderson - Hasselbalch Equation

Latin:

1. How to Read It and How to Write It using a unique "Color Coded" approach
2. How to Speak It

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