

Lab 9 – Urinalysis, pH, and Intro to Acid-Base Balance

URINALYSIS

1st – Test each of four urine samples A, B, C, & D and identify any abnormal components in each. Instructor will give directions on how to use the urinalysis test strips.

- Don't try to quantify (measure) the amounts of anything – you're just identifying the presence of any components that shouldn't be there.
- Ignore any abnormal pH or specific gravity values in these samples. Urine pH is normally 6-7.

2nd – **OYO:** If you identify an abnormal component use Table 25.2 p.1024 / 985 to identify possible causes.

Sample A

Sample B

Sample C

Sample D

Group Quiz for Section 1 - Essentials of pH and Sources of H⁺

The pH # is the _____ of the _____ concentration.

A smaller pH # means _____ (more / less) free hydrogen ion present.

Each whole # change on the pH scale represents a _____ change in H⁺ concentration. So a pH 5 would have _____ as much free H⁺ as a solution of pH 7.

If a solution is “neutral” what does that mean about the ratio of H⁺ to OH⁻ and what would the pH # be? _____

If a solution is “acidic” what does that mean about the ratio of H⁺ to OH⁻ and the pH # will always be _____?

If a solution is “alkaline” what does that mean about the ratio of H⁺ to OH⁻ and the pH # will always be _____?

Define “acid.”

Define “base.”

Give 6 examples of acids and 4 examples of bases in the body.

Acids

Bases

Name 5 sources of H⁺ being added to your body fluids on a regular basis.

Foods:

Stomach:

Catabolism of fuels:

1)

2)

3)

This constant influx of H⁺ is tending to cause pH of the blood to _____ (↑ or ↓)

Group Quiz for Section 2

pH of Body Fluids and 3 Compensatory Mechanisms

Unless specified, pH of “body fluids” always refers to _____ blood. (arterial / venous)

What is the preferred “ideal” pH range of arterial blood? _____

Which blood is slightly more acidic? _____ (arterial / venous) Why?

If your pH is slightly above this range you are said to be in _____

If your pH is slightly below this range you are said to be in _____

Because we constantly produce acids we have a fairly constant influx of H^+ . This tends to put us in a condition of _____.

What is the extreme low and extreme high we can tolerate? _____

Why is the pH of body fluids important?

Tell me all you know about **renal adjustments** as a compensatory mechanism for controlling blood pH.

Tell me all you know about **respiratory adjustments** as a compensatory mechanism for controlling blood pH.

OVER→

Tell me all you know about **chemical buffers** as a compensatory mechanism for controlling blood pH.

Only one of the 3 mechanisms actually removes H^+ from the body. Which one? _____

One of the 3 mechanisms does NOT actually adjust pH up or down but minimizes the amount of change in pH. You could say it prevents drastic changes. Which one? _____

One of the above can adjust pH up or down but does not actually remove H^+ from the body. Which one? _____

If your blood pH were 7.30 your RR should _____ (\uparrow or \downarrow) to compensate.
How would this adjust the pH?

If your blood pH were 7.30 your kidneys should _____ and _____ to compensate.

Explain how each of these actions would adjust the pH of the blood.