

## pH and Enzyme Function

The purpose of this experiment is to investigate the effect of pH on an enzyme's ability to function properly. Common baker's yeast (*Saccharomyces cerevisiae*) will be used as a source of catalase. Catalase is the enzyme which decomposes hydrogen peroxide into water and oxygen.

### Procedure:

1. Using the hole punch, punch out 15 disks of filter paper. Make sure they are all of uniform size.
2. Label 5 beakers "pH 3", "pH 5", "pH 7", "pH 9", and "pH 11". Pour 30 mL of each solution into the appropriate beaker.
3. Place a small sample of the prepared baker's yeast solution in a beaker and place the 15 disks into it. Allow the disks to soak in the solution for a few minutes.
4. Using forceps, take one of the disks out of the yeast solution and put it at the bottom of the beaker labeled "pH 3". When the disk makes contact with the bottom of the beaker, start timing. When the disk reaches the surface of the solution, stop timing. Record the time.
5. Remove the disk and rinse and dry the forceps.
6. Perform five trials for each pH.
7. Produce a graph of time vs. pH. Plot the average of the trials for each pH.

### Questions:

1. According to your data, what is the optimum pH for the enzyme? At which pH is the enzyme the most denatured?
2. Predict the effect of altering the temperature of the solutions.
3. State some common situations where pH or temperature can affect enzyme activity.