**Investigating the effect of temperature on amylase activity STUDENT**

**Introduction**

Amylase is an enzyme that catalyses the breakdown of the polysaccharide starch. In this activity you are going to investigate the effect of temperature on amylase activity by designing and carrying out a short investigation.

**Aim**

* To investigate the effect of changing the temperature on the rate of starch breakdown by amylase.

**Intended class time**

* 1 hour

**Equipment available**

* 1% Starch solution
* 1% Amylase solution
* Iodine

*Note: Iodine solution is orange/brown but in the presence of starch it turns blue/black in colour*

* Thermometer
* 5 cm3 and 10 cm3 syringes
* 10 cm3 measuring cylinders
* 50 cm3 beakers
* Test tubes
* Dropping pipettes
* pH test strips
* Marker pen
* Spotting tile
* Stopwatch/timer
* Water baths at 40°C, 60°C and 80°C
* Ice
* Tap Water

**Method**

1. Using your knowledge of enzymes and the factors that affect enzyme activity, suggest a hypothesis for this investigation.
2. Next, using all or some of the equipment and solutions provided, design an experiment to investigate the effect of temperature on amylase activity. Ensure you consider the control of variables in your experiment, the reproducibility of your method and the usefulness of replicates.
3. Check your method with your teacher and carry out your practical activity. Record your data appropriately. If you are working in a group, ensure each student has the opportunity to set up, measure and record readings.
4. Process and present your data appropriately.
5. Finally, draw a conclusion based on the results you obtained and relate this to your original hypothesis.

**Extension questions**

1. Evaluate the method you designed to carry out this activity. Could it be improved? What were the limitations of your investigation?
2. Why was it important to consider all the variables?
3. Explain the shape of the graph you have drawn using biological ideas and relevant enzyme theory.
4. Discuss the success of this activity with the rest of your class. Consider what worked well and what did not for different individuals/groups in the class.

**To submit**

For this piece of work to count towards Practical Activity Group 4 of the GCE Biology Practical Endorsement, you should have evidence of the hypothesis you wrote, the method you designed, and a table and graph of your results and have considered the above questions as the answers to these questions will aid you in preparation for your written examinations.