BSC 1010L Lab FINAL EXAM **CURLS FALL 2011**

Answer the following questions to the best of your ability. Make sure you answer ALL parts of a question.

1. Yeast cells are placed in an apparatus with a solution of sugar (a major nutrient for yeast metabolism). The apparatus detects bubbles of gas released by the yeast cells. The rate of respiration varies with the surrounding temperatures as indicated by the data below.

Temperature (°C)	0	10	20	30	40	50	60	70
Number of bubbles of gas produced per minute	0	3	7	12	7	4	1	0

(a) **Graph** the results on the axes provided. **Determine** the optimum temperature for respiration in the yeast.

(b) Respiration is a series of enzyme-catalyzed reactions. Using your knowledge of enzymes and the data above, **analyze** and **explain** the results of this experiment.

(c) **Design** an experiment to test the effect of varying the pH of the sugar solution on the rate of respiration. Include a prediction of the expected results.

2. Consider the following table regarding red blood cells in various solutions, then answer the questions that follow:

SOLUTION	APPEARANCE/CONDITION OF CELLS
D (blood only)	Biconcave disks
A	Cells shrink
B	Cells swell, burst, and disappear
C	Cells appear as biconcave disks.

a. Based on the table above, which solution is HYPOTONIC? JUSTIFY your answer.
b. Based on the table above, which solution is HYPERTONIC? JUSTIFY your answer.
c. Based on the table above, which solution is ISOTONIC? JUSTIFY your answer.

3. Use Table 3.1 below to answer the following questions.

TABLE 3.1	Molarity of Sucrose solution	% Change in mass of potato tubers
	0.0	+13.24
	0.1	+7.76
	0.2	+1.92
	0.3	-5.41
	0.4	-12.29
	0.5	-13.20

a. Construct a graph using the data from Table 3.1.
b. Distinguish the INDEPENDENT and DEPENDENT variables.
c. BRIEFLY explain the meaning of the data shown.
d. At what Molarity do the tubers reach equilibrium with the sucrose?
e. List 4 CONTROLS you used when performing the above experiment.