**2019 GEISC TASK 2 – Cell Membrane Practical**

**Marking Key**

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| **Question** | **Marks** |
| **Independent Variable**: | |
| * change in temperature/temp of water/temp of agar/etc | **/1** |
| **Dependent Variable** | |
| * how far the sodium hydroxide diffuses into the agar/distance sodium hydroxide moves | **/1** |
| **Create a concise and testable hypothesis for this experiment** | |
| * “If-then” statement * Logical relationship between independent and dependent variable stated | **/2** |
| **In the space below create an appropriate graph to record how much agar has turned pink, at the three different temperatures, every three minutes** | |
| * Headings * Logical format * Units | **/3** |
| **Laboratory safety** | |
| * safety equipment on, safe use of chemicals | **/1** |
| **Appropriate care of laboratory equipment** | |
| * care is taken with hot water, put equipment away/clean lab equipment | **/1** |
| **Draw a graph of your results** | |
| Title – independent and dependent variable  * Axis labelled correctly with units * Scales on axis correct * Points plotted accurately * Line graph * Key/legend | **/6** |
| **Describe any trends shown in the graph.** | |
| * As temperature increases the sodium hydroxide moves further down the agar/diffuses further * Uses data to support description   + in cold water ………..   + in hot water ………… | **/3** |
| **Write an appropriate scientific conclusion for this experiment** | |
| * Must make a reference to the results shown in the graph * Then link to hypothesis | **/2** |
| **State two variables that were controlled during your experiment and explain why they needed to be controlled.** | |
| One mark for any two of the following:   * SA of agar * Size of test-tube * Amount of NaOH   One mark for: because these would also impact the diffusion of the sodium hydroxide | **/3** |
| **State one way to improve the reliability of this experiment** | |
| * Repeat trials and calculate an average | **/1** |
| **Describe whether this was a valid experiment** | |
| * State that it is not valid * Explains that the experiment is *modelling* a real cell/experiment not actually in a real cell/method does not address the aim | **/2** |
| **State a definition for diffusion.** | |
| * Similar to - “ Molecules move from an area of high concentration (where there are many molecules) to an area of low concentration (where there are fewer molecules). | **/1** |
| **Explain why the sodium hydroxide diffused faster in the warmer beakers.** | |
| * Molecules move faster when warm * so, drag sodium hydroxide through the agar quicker so moves quicker | **/2** |
| **Explain why reptiles move slower when they are cold** | |
| * Nutrients diffuse into cells slower * So, slow to make energy needed to move /similar | **/2** |
| **State the nutrients needed by your cell to conduct Cellular Respiration.** | |
| * Glucose * Oxygen | **/2** |
| **Name the cell organelle that respiration occurs in** | |
| * Mitochondria | **/1** |
| **Describe why humans cannot photosynthesise.** | |
| * No chloroplast/organelle for photosynthesis is missing | **/1** |
| **Using your knowledge of diffusion, explain why rubbish bins smell worse in summer than winter.** | |
| * The smell particles given off by the rubbish move quicker in the heat/or heat makes them move * So, move further from the bin so you can smell them/move out of the bin | **/2** |
| **Using your knowledge of diffusion and cells, explain why you think it is important for a person to remain active when in a very cold climate such as Antarctica?** | |
| * If they are active their body will stay warm * therefore, the cells will be able to function, and person stay alive | **/2** |
| **Draw and label a diagram of a cell membrane.** | |
| * 1 mark for drawing the phospholipid and channel protein * 1 mark for labelling the phospholipid | **/2** |
| **TOTAL** | **/41** |