**Biology 9 – Unit 2: Data Analysis Practice #1 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **Make two graphs with the following experiment information (simple and facilitated diffusion).**

A second study was carried out to investigate the effect of passive protein channels on the movement of glucose into cells. The raw data below shows the rate of uptake of glucose into erythrocytes by simple diffusion and facilitated diffusion.

**Simple diffusion**

|  |  |
| --- | --- |
| Rate of glucose uptake (mmole/cm3hour) | External concentration of glucose (mmole/dm3) |
| **10** | **1** |
| **12** | **2** |
| **15** | **3** |
| **20** | **4** |
| **22** | **5** |
| **25** | **6** |
| **29** | **7** |
| **30** | **8** |

**Facilitated diffusion**

|  |  |
| --- | --- |
| Rate of glucose uptake (mmole/cm3hour) | External concentration of glucose (mmole/dm3) |
| **50** | **1** |
| **80** | **2** |
| **110** | **3** |
| **150** | **4** |
| **170** | **5** |
| **200** | **6** |
| **220** | **7** |
| **250** | **8** |

1. **Make a conclusion regarding the two graphs.**

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**Biology 9 – Unit 2: Data Analysis Practice #2 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**1.** The sense of taste is normally caused by the stimulation of chemoreceptors in the taste buds of the tongue. There are four main “tastes”: sweet, salty, bitter and sour. The tongue also has receptors for temperature. It is known that the taste of food can vary according to whether it is cold, warm or hot. Scientists discovered that just warming or cooling parts of the tongue, even when no food was present, also caused a sensation of taste. Scientists experimented with a group of people. They gradually cooled the tips of their tongues and measured the intensity of the taste felt by each member of the group. The experiment was repeated, this time warming the tip of the tongue. The graphs show the average values for the group.



(a) Identify which taste was felt most strongly when the tip of the tongue was

(i) cooled................................................................................................................

(ii) warmed..............................................................................................................

(1 point)

(b) Compare the effects on the taste of **sweetness**, of warming and cooling the tip of the tongue.

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(1 point)

**2.** A study was carried out to determine the relationship between the diameter of a molecule and its movement through a membrane. The graph below shows the results of the study.



(a) From the information in the graph alone, describe the relationship between the diameter of a molecule and its movement through a membrane.

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(1 point)

A second study was carried out to investigate the effect of passive protein channels on the movement of glucose into cells. The graph below shows the rate of uptake of glucose into erythrocytes by simple diffusion and facilitated diffusion.



(b) Identify the rate of glucose uptake at an external glucose concentration of 10 mmol dm–3 by

(i) simple diffusion; .........................................

(ii) facilitated diffusion. .........................................

(2 points)

(c) (i) Compare the effect of increasing the external glucose concentration on glucose uptake by facilitated diffusion and by **simple** diffusion.

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(2 points)