**Marking key - HB11 ATAR – Lab – Looking at exchange of materials in eggs**

Write up a formal report of the experiment that was done on the eggs.

1. **Introduction:**. Questions you should answer include:

* Why did we do this experiment? *Investigating osmosis*
* Why were eggs used? *Animal cells*
* Why would the eggs need to be de-shelled? *To allow free movement*
* What is meant by the following terms?
  + Concentration
  + Solution
  + Hypertonic
  + Hypotonic
  + Isotonic
  + Diffusion
  + Osmosis

*1 mark per point covered = 10 marks*

1. **Hypothesis**: This describes the hypothesis to be tested. The hypothesis should be a testable statement, referring to both independent and dependent variables.

*1 mark for statement predicting, 2 marks if independent and dependent clearly linked = 2*

1. **Materials or Equipment**: This is a list of equipment needed. A well-labelled diagram showing the set up of equipment to be used is usually included.

*1 mark for list + 1 mark for diagrams = 2*

1. **Method**: This is a set of instructions; in point form, for carrying out the experiment. They should be sufficiently detailed that someone else could use them to carry out the same experiment. The instructions should include details of:
   * 1. What you are changing (independent variable), and how it is being changed
     2. What you are comparing your experimental set-up to (the control)
     3. What you are measuring (dependent variable), and how it is to be measured
     4. What things are being kept constant between the experimental and control groups (controlled variables)
     5. How you are increasing reliability of the experiment (sample size, replication, repetition, etc)

*1 mark for method + 1 mark if in point form = 2*

*1 mark each for independent (salt concentration), dependent variable (change in mass of egg) & control (tap water) identified = 3*

*1 mark for at least 2 controlled variables*

*1 mark for at least 2 ways increasing reliability (eg multiple groups, control used)*

1. **Results**: This shows the measurements and observations you have made. This should include tables and graphs of the data you collected where possible, as well as a written summary of the observations, and any patterns observed. Your table should have **the headings** initial weight, final weight, weight loss or gain, and percentage change.

*1 mark for table*

*1 mark change calculated correctly*

*1 mark percentage change calculated correctly*

*1 mark averages calculated*

*1 mark statement that describes changes seen*

*4 marks graph – bar graph of average percentage changes*

1. **Conclusion**: A statement as to whether the hypothesis has been supported or disproved (or neither).  *1*
2. **Discussion or Analysis**: Questions you should answer include:
3. Were there any problems or difficulties with the experiment? *1*
4. How could you improve the reliability of the experiment? *1*
5. Explain the change in appearance of the egg in this solution in terms of diffusion and osmosis by answering the following questions:
6. Describe what happened to the weight of the egg in the **distilled** water. *1*
7. Was this solution hypotonic or hypertonic compared to the egg? *1*
8. What was happening in terms of osmosis? *1*
9. Describe what happened to the weight of the egg in the **tap** water. *1*
10. Was this solution hypotonic or hypertonic compared to the egg? *1*
11. What was happening in terms of osmosis? *1*
12. Describe what happened to the weight of the egg in **salt**. *1*
13. Was this solution hypotonic or hypertonic compared to the egg? *1*
14. What was happening in terms of osmosis? *1*
15. No **isotonic** solution was used in this experiment. If one had of been used,
    1. What would you expect the egg to look like at the end of the experiment? *1*

ii) What movement of water would you have expected to see in this solution? *1*

1. Blood plasma is normally isotonic to the cells in our body. What would happen if our blood became
2. Hypertonic? *1*
3. Hypotonic? *1*

Practical Skills *4*

Total \_\_\_/50