**Human Biology – ATAR Year 11**

**Task 1 – Unit 1 Assessment type: Science Inquiry**

Conditions

Time allowed for completion of the task:

* Investigation planning completed and submitted Week 1
* Conducting investigation, using two class periods Week 1
* Reporting and writing up of investigation results completed and orally presented to class Week 1
* Validation of Science Inquiry skills Week 2

Environment

Validation Task is completed individually under teacher supervision. No text or notes permitted.

A pharmaceutical company was investigating the possibility of a new drug for the treatment of patients with heat stroke or hyperthermia. The designed effect of the drug was to increase the skin blood flow of the patients within minutes of administering the drug intra-venously.

In order to test the efficacy of the drug a trial was conducted in which patients admitted to the emergency rooms of hospitals with heat stroke were asked if they wished to participate. A total of 180 patients agreed to take part over the duration of the trial.

Participants were put in to one of two groups. One group of patients would receive an intra-venous injection of the new trial drug and the other group would receive an intra-venous injection of saline (sterile salty water). The normal protocols for treating patients with heat stroke were also carried out for both experimental groups. Each group had 90 individuals.

The skin temperature of participants was recorded on their administration to the ER and every ten minutes after their intra-venous injection. A summary of this data is included in the table below.

Examine the data presented and answer the questions that follow.

**The effects of new drug on lowering body temperature of patients suffering heat stroke**

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| Treatment Group | Number of patients | Average Temperature (oC) on admission | Average Temperature (oC) following administration of drug or saline | | | | | |
| 10 min | 20 min | 30 min | 40 min | 50 min | 60 min |
| New Drug | 90 | 40.8 | 39.9 | 38.6 | 37.5 | 37.3 | 37.2 | 37.2 |
| Saline Drug | 90 | 40.6 | 39.9 | 39.3 | 38.7 | 38.2 | 37.8 | 37.4 |

(a) (i) State the hypothesis for this investigation. (2 mark)

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(ii) State the independent variable. (1 mark)

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(iii) State the dependent variable. (1 mark)

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(b) On the graph paper provided, construct a graph that can be used to represent the data. (5 marks)

(c) What was the purpose of the group given the saline injection?

(2 marks)

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(d) List 3 variables that would need to be controlled to ensure the validity of the testing. (3 marks)

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(e) Explain how the Scientist ensured the test results were reliable?

(1 mark)

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(f) State the valid conclusion that can be drawn from this investigation (2marks)

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(g) List one way in which the scientists ensured the testing conducted was ethical.

(1 mark)

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Marking Key Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Description | Mark |
| States hypothesis clearly   * Statement * Includes independent & dependent variable | 2 |
| Identifies independent variable | 1 |
| Identifies dependent variable | 1 |
| Graph   * Appropriate graph selection * Title * Axis labelled- units * Appropriate scale * Plotted accurately * Key | 7 |
| Purpose of 2 groups clearly explained | 2 |
| Any 3 relevant factors | 3 |
| Reliability | 1 |
| Conclusion   * Identifies trends in data * Relates to hypothesis | 2 |
| List one feature relating to ethics | 1 |
| **Total** | 20 |

**Comments:**