**MARKING KEY**

**43 marks**

**Research and Planning**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| **Background information** | |
| * Accurately identifies that receptors are structures that can respond to changes in the internal or external environment * Has a table that accurately states the location of photoreceptors, mechanoreceptors (sound, touch, pressure and proprioception), chemoreceptors, nociceptors and thermoreceptors * States that reflexes are important for responding to environmental changes in a timely manner so that the body can avoid danger/harm * Describes the difference between reflexes and reactions in structure (reflex arc vs brain-down response) and function (protective vs just responding to changes in environment) * A statement of three different factors that affect reaction time (drugs, caffeine, fatigue, age, etc.) | /5 |
| **Aim** | |
| * Appropriate general statement   “To determine the impact of *independent variable* on *dependent variable*” | /1 |
| **A hypothesis** | |
| * States testable relationship between independent and dependent variable * If-then statement | /2 |
| **Independent and dependent variables** | |
| * One mark for each accurate variable identification | /2 |
| **Three controlled variables** | |
| * Any three controlled variables that are appropriate | /3 |
| **Equipment List** | |
| * Neatly presented with all materials required | /1 |
| **Method** | |
| * Presented in a logical, step-by-step format * Method would actually test the hypothesis * States an appropriate number of participants to use * Gives specific details on how to complete the reaction test * Gives specific details on how to change the independent variable * Includes repeat trials | /6 |
| **Table** | |
| * Title * Column/row for averages | /2 |
| **TOTAL** | **/22** |

**Analysis and evaluation**

|  |  |
| --- | --- |
| **Description** | **Marks** |
| **Write an appropriate hypothesis for the method that you have been given** | |
| * States testable relationship between independent and dependent variable * If-then statement | /2 |
| **Create an appropriate table to display your data** | |
| * Title * Column/row for averages | /2 |
| **Graph** | |
| * Title with both independent and dependent variables * Bar graph * Points plotted correctly * Scale correct * Axes both labelled with units | /5 |
| **Describe the trend and/or pattern in your data. Use data from the graph to support your answer** | |
| * Describe the impact of the independent variable on the dependent variable * Uses 2 pieces of data to support description | /2 |
| **Use your knowledge and understanding of the nervous system to explain the trend and/or pattern of your results** | |
| 3 marks for -   * Applies concepts and scientific knowledge to describe structures and systems and explain processes, in detail.   2 marks for -   * Applies concepts and scientific knowledge to describe structures and systems and explain some processes.   1 mark for -   * Describes some structures, systems and processes in a general way. | /3 |
| **State whether this experiment is valid. Explain your reasoning** | |
| CAN’T MARK THIS QUESTION AS STUDENTS DIDN’T HAVE THE ORIGINAL AIM |  |
| **State two improvements to the experimental design, and explain how these improvements will increase the reliability of your data** | |
| * 1 mark for each appropriate improvement * 1 mark for each supporting explanation of improvement | /4 |
| **Write a scientific conclusion** | |
| * States the relationship between the independent and dependent variable * Refers to data * States whether the hypothesis is supported | /3 |
| **TOTAL** | **/21** |