	Assessment Criterion B: Inquiring & Designing			
	1-2	**3-4**	**5-6**	**7-8**
B (i) Problem or Question	**State** a problem or question to be tested by a scientific investigation	**Outline** a problem or question to be tested by a scientific investigation	**Describe** a problem or question to be tested by a scientific investigation	**Explain** a problem or question to be tested by a scientific investigation
	State *in research question or introduction:* Both the IV and DV	***Outline*** *the research question by including 2 of 4:* - IV and DV - IV units - DV units - How the DV is measured	***Describe*** *in Introduction:* - Relevant background information on the variables ***Describe*** *the research question* by including *3 of 4:* - IV and DV - IV units - DV units - How the DV is measured	***Explain*** *in the introduction:* - The relevant background information on the variables and a reason for or importance of the investigation ***Outline*** *the research question by including all:* - IV and DV - IV units and range - DV units and how DV is measured
B (ii) Hypothesis	**Outline** a testable hypothesis	**Formulate** a testable hypothesis using scientific reasoning	**Formulate** and **explain** a testable hypothesis using scientific reasoning	**Formulate** and **explain** a testable hypothesis using **correct scientific reasoning**
	- **Outline** a hypothesis states a predicted relationship between IV and DV	- **Formulate** a hypothesis that includes the relationship between IV and DV, using scientific reasoning	- **Formulate** a hypothesis that includes the relationship between IV and DV that is **explained** using scientific reasoning	- **Formulate** a hypothesis that includes the relationship between IV and DV that is **explained** using **correct** scientific reasoning

B (iii) Variables	**Outline** the **variables**	**Outline** how to manipulate the variables, and **outline** how relevant data will be collected	**Describe** how to manipulate the variables, and **describe** how sufficient, relevant data will be collected	**Explain** how to manipulate the variables, and **explain** how sufficient, relevant data will be collected
	- **Identify** the IV, DV, and some relevant CVs	- **Outline** the manipulation of the IV by including units and range - **Outline** the manipulation of the DV using units and measurement tool - **Outline** some relevant CVs are with an attempt on how they should be controlled	- **Describe** the manipulation of the IV by including units, range and **attempted justification** for choice of range - **Describe** the manipulation of the DV by including units, number of repeats and **how** the measurement tool is being used - **Describe** some CVs,, including detail on how they should be controlled	- **Explain** the manipulation of the IV by including units, range and **logical justification** for choice of range - **Explain** the manipulation of the DV by including units, number of repeats and detail on **how** the measurement tool is being used - **Explain** all the relevant CVs, including detail on how and why they should be controlled
B (iv) Method	**Design** a method, with **limited success**	**Design** a safe method in which he or she **selects** materials and equipment.	**Design** a complete and safe method in which he or she **selects** appropriate materials and equipment.	**Design** a logical, complete and safe method in which he or she **selects** appropriate materials and equipment.
	A Procedure - **Attempt** to **design** a step by step method	*A Material List* - **Select** material and equipment *Procedure* - **Design** a step by step method is appropriate to address the research question, but may not allow for reproducible results *Safety* - **Identify** and **state** some relevant physical or chemical hazards	*A Material List* - **List** correct materials with some information about number / mass / volume / size / concentration etc. *Procedure* - **Design** a step by step method that is complete and mostly appropriate to address the research question *Safety* - **Identify** and **outline** most physical and chemical hazards with some detail of how they can be prevented	*A Material List* - **List** all correct materials that include all specific information about number / mass / volume / size / concentration etc. *A Procedure* - **Design** a step by step method that is detailed and completely appropriate to address the research question, and would allow for reproducible results *A Risk Assessment* - **Identify** and **describe** relevant physical and chemical hazards with detail of how they can be prevented

	Criterion C: Processing & Evaluating			
	1-2	**3-4**	**5-6**	**7-8**
C (i) Table and Graph	**Collect** and **present** data in numerical and/or visual forms	**Correctly collect** and **present** data in numerical and/or visual forms	**Correctly collect, organise** and **present** data in numerical and/or visual forms	**Correctly collect, organise, transform** and **present** data in numerical and/ or visual forms
	Quantitative data: - **Present** a table that fulfils 4 from: D - decimals consistent I - IV in the first column T - title H - headings U - units G - gridlines - **Draw** a graph that fulfils 3 from: S - scale is appropriate P - plot is correct L - line of best fit A - axis correct with units T - titles	*Quantitative data:* - **Present** a table that fulfils 5 from DITHUG (see 1-2) - **Draw** a graph that fulfils 4 from SPLAT (see 1-2)	*Quantitative Data* - **Present** a table that fulfils DITHUG - **Draw** a graph that fulfils SPLAT - **Present** average in a table and graph *Qualitative Data* - **Present** qualitative data in any format -	*Quantitative Data* - **Transform** data as shown in the mean or other processed data by using an example calculation - Successfully meet the Level 5-6 criteria *Qualitative Data* - **Present relevant** qualitative data
C (ii) Data Analysis & Conclusion	**Interpret** data	**Accurately interpret** data and **explain** results	**Accurately interprets** data and **explains** results **using scientific reasoning**	**Accurately interprets** data and **explains** results **using correct scientific reasoning**
	Interpret *results:* - **State specific** data that is used to interpret the trend	*Accurately* ***interpret*** *data:* - **State** the **correct** relationship between IV and DV is given ***Explain*** *results:* - **Explain** results using specific data	*Accurately* ***interpret*** *data:* - **State** the **correct** relationship between IV and DV is given and **use** mathematical language ***Explain*** *results:* - **Explain** results using specific data and scientific reasoning - **Identify** any outliers or anomalies .	*Accurately* ***interpret*** *data:* - State the **correct** relationship between IV and DV and **use detailed** mathematical language about the shape of the graph (linear / nonlinear) ***Explain*** *results.* - **Explain** results using specific data and **correct** scientific reasoning - **Suggest** possible reasons for the identified outliers or anomalies

C (iii) Evaluation of Hypothesis	**State** the validity of a hypothesis based on the outcome of a scientific investigation	**Outline** the validity of a hypothesis based on the outcome of a scientific investigation	**Discuss** the validity of a hypothesis based on the outcome of a scientific investigation	**Evaluate** the validity of a hypothesis based on the outcome of a scientific investigation
	State *validity of hypothesis:* - **State** data from the table or graph to accept **or** reject the hypothesis.	***Outline*** *validity of hypothesis:* - **Outline** data from the table **and** graph to correctly accept or reject the hypothesis	***Discuss*** *validity of hypothesis:* - **Discuss** any strengths **and** weaknesses of specific data from the table and/or graph to correctly accept or reject the hypothesis - **Attempt** to **discuss** the strength of correlation between the variables	***Evaluate*** *validity of hypothesis:* - **Evaluate** the strengths **and** weaknesses of specific data from the table **and** graph to correctly accept or reject the hypothesis - **Discuss** correlation and/or specific anomalies and outliers
C (iv) Evaluation of the Method	**State** the validity of the method based on the outcome of a scientific investigation	**Outline** the validity of the method based on the outcome of a scientific investigation	**Discuss** the validity of the method based on the outcome of a scientific investigation	**Evaluate** the validity of a method based on the outcome of a scientific investigation
	- **State** a strength **or** weakness of the method, with an **attempt to link** to specific data or the outcome of the investigation	- **Outline** any strengths **or** weaknesses of the method and **link** to specific quantitative **or** qualitative data	- **Discuss** any strengths **and** weaknesses of the method, and **link** to specific quantitative **or** qualitative data	- **Evaluate** the strengths **and** weaknesses of the method, and **clearly link** to specific quantitative **and** qualitative data - **Evaluate** the validity of the method to answer the research question
C (v) Improvements	**State** improvements or extensions to the method that would benefit the scientific investigation	**Outline** improvements or extensions to the method that would benefit the scientific investigation	**Describe** improvements or extensions to the method that would benefit the scientific investigation	**Explain** improvements or extensions to the method that would benefit the scientific investigation
	Improvements - **State** an improvement for **some** identified weaknesses OR *Extensions* - **State** an additional IV or DV for a future investigation	*Improvements* - **Outline** improvements for identified weaknesses and **suggest** the effect of the improvement on the results OR *Extensions* - **Outline** an additional IV or DV for a future investigation **and suggest** why this would be beneficial	*Improvements* - **Describe** improvements for most identified weaknesses including how the improvements will have a direct effect on the results OR *Extensions* - **Describe** an additional IV or DV for a future investigation **and justify** why this would be beneficial	*Improvements* - **Explain** logical improvements for **all** identified weaknesses **and explain** how the improvements will have a direct effect on the results OR *Extensions* - **Explain** an additional IV or DV for a future investigation **and justify** why this would be beneficial, linking to a **wider context**