

ATAR Physics Unit 1

**Experiment Assessment 2**

**Properties of Alpha and Beta particles**

Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Experiment date: \_\_Week 9\_\_\_\_\_\_\_\_\_\_\_

Write-up due: Friday 12th April 2019

Weighting: 3.5% of Sem 1 weighting

I acknowledge that all the information contained in this task is my own work and not taken from other sources. If other sources have been used they have been acknowledged in my references.

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**TOTAL MARKS**

**/34**

(Student Signature)

Teacher Comments:

**Marking Key – Specific Heat Capacity of a Metal**

This experiment is based on STAWA Experiment 5.3 in Exploring Physics Year 11. In this experiment, you will determine the penetration power of alpha, beta and gamma radiation.

|  |  |
| --- | --- |
| **Planning**   * **Aims** of the experiment. * **Apparatus** being used to conduct the experiment. (List & Diagrams) * **Method** – A sequence of steps that would allow experiment to be replicated. * **Variables** – The factors identified that are measured, varied or controlled. * **Safety** – The safety issues involved and how these were addressed. | 1  2  4  2  1 |
| **Total** | **/10** |
| **Results**   * Use of appropriate tables to record data. | 4 |
| **Total** | **/4** |
| **Discussion**   1. Determine the average background count per minute. 2. Obtain the true count rate (counts per minute) by subtracting the average background counts per minute from the total counts per minute. 3. Graph distance from the source vs. true counts per minute for each source. If possible, graph both on the same axes. 4. Compare each of the materials tested (paper, aluminium and lead) for their ability to block each type of radiation. 5. Describe what you have found out from the results in a brief paragraph.   **Analysis**:  Use your textbook or another reference if necessary to find answers to the following:   1. Draw up a small table that summarises the characteristics (mass, charge and speed) of alpha, beta and gamma radiation. 2. Account for the different penetrating abilities of each type of radiation in terms of their characteristics. 3. Americium-241 also emits gamma radiation. How has this affected your results? 4. How far through human tissue does each type of radiation penetrate? 5. Some watches use water doped with tritium (which is a beta-emitter) to make the hands glow in the dark. Comment on the safety implications of this practice. | 1  1  2  2  2  2  3  1  1  1 |
| **Total** | **/16** |
| **Conclusion**  Report documents:   * A summary of how your results related to your prediction. | 2 |
| **Total** | **/2** |
| **Literacy**   |  |  |  | | --- | --- | --- | | 0 | 1 | 2 | | More than 4 spelling/grammar errors | 2-3 spelling/grammar errors | 0-1 spelling/grammar errors | |  |
| **Total** | **/2** |
| **Grand Total** | **/34** |