Physics 2 Topic 6: Nuclear and Stars

Extended Writing Task: **Nuclear Power**

Nuclear reactions are often deemed by the public as dangerous and many people react with fear at the thought of a nuclear power station being built. Outline what nuclear actually means. You should include the following:

* An explanation of what nuclear fusion is
* An explanation of what nuclear fission is
* An description of where nuclear fusion happens and why it is important
* An explanation of how a fission reaction could lead to a chain reaction
* How a chain reaction can be stopped
* Diagrams to support your explanations.

Continue this task on lined paper and attach it behind this sheet.

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Physics 2 Topic 6: Nuclear and Stars Extended Writing Task: **Nuclear Power**

This work was done by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and was marked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| P | **Praise. What were the positive aspects of the work? What did they do well? What skills did they demonstrate?** | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | |
| I | **Improvements. What were the literacy issues in the piece of work?** | | | | *Write in ink.* | |  | | *Draw in Pencil.* |  | | *Use a ruler.* | |  | |
| Always use capital letters at the beginning of a sentence. | | |  | Learn the spellings identified in your work. | | | | | | | | |  | |
| Always use capital letters for proper nouns. | | |  | Ensure sentences make sense. | | | | | | | | |  | |
| Make sure you write on the line and not above or below it. | | |  | Use correct punctuation. | | | | | | | | |  | |
| Use scientific vocabulary appropriate to the task. | | |  | Vary your sentences to demonstrate your understanding. | | | | | | | | |  | |
|  | | | | | | | | | | | | | | |
| **D answer** | | | **B answer** | | | | | **A\* answer** | | | | | | | |
| A statement is made that explains that nuclear fusion is the joining of two atoms or nuclei. | |  | Nuclear fusion is the joining of two nuclei to form one nucleus. | | |  | | Nuclear fusion is the joining of two small nuclei to form one larger nucleus and releases energy. | | | | | | |  |
| A statement is made that explains that nuclear fission involves splitting of an atom or nucleus. | |  | Nuclear fission is the splitting of a nucleus into two nuclei and releases energy. | | |  | | A heavy nucleus absorbs a neutron and splits into two smaller nuclei releasing energy and two or three neutrons. | | | | | | |  |
| The supporting diagrams of fusion and fission are incorrect or missing. | |  | The supporting diagrams are labelled... | | |  | | ...the fission diagrams shows two or three neutrons released. | | | | | | |  |
| There is a statement that nuclear fusion happens in stars and keeps them shining. | |  | Nuclear fusion happens in stars and the energy given out heats and lights the Earth. | | |  | | Nuclear fusion happens in stars where Hydrogen is fused into Helium and gives out heat and light. | | | | | | |  |
| A chain reaction is described as one atom or nucleus splitting and causing another one to split. | |  | A chain reaction is described as a nucleus splitting and releasing a neutron which is then absorbed by another nucleus which splits and so on... | | |  | | ...the explanation mentions that each fission event releases two or three neutrons. | | | | | | |  |
| There is a statement that a chain reaction can be stopped with some reference to the neutrons. | |  | The statement refers to the **removal** of neutrons (or when all the nuclei have undergone fission)... | | |  | | ...a steady state is reached when the fission of **one** nucleus goes on to cause **one** more to split. | | | | | | |  |
| There is a diagram of a chain reaction... | |  | ...showing one nucleus split and release a neutron which is absorbed by another nucleus... | | |  | | ...the nucleus releases two or three neutrons and is labelled. | | | | | | |  |
| N | **Next Steps. How can they move their work onto the next grade? What didn’t they include?** | | | | | | | | | | **Grade** | | **Effort** | | |
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