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** |
|  |  |  |