**6.3 CLASS WORKSHEET – NUCLEAR ENERGY**

**1.              Nuclear fission**

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| An example of a nuclear fission reaction is $$ 🡪$$ + $$ + 2$$ |
| (a) | Write nuclear equations for the following fission reactions:(copy the above equation and change the values and symbols) |
| (i) | The fission of Uranium-235 to produce caesium-144 and rubidium-90 |
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| (ii) | The fission of plutonium-239 to produce xenon-134 and zirconium-103 |
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| (b) | Explain why nuclear fission can result in a “chain reaction”. |
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| (c) | Explain the role of boron rods in a nuclear reactor. |
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| (d) | Explain the main environmental problem associated with nuclear fission reactions. |
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**2.              Nuclear fusion**

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| An example of a nuclear fusion reaction is $$ + $$ 🡪 $$ + $$ |
| (a) | Where does the above reaction take place and why is it important? |
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| (b) | Write nuclear equations for the following fusion reactions:(copy the above equation and change the symbols) |
| (i) | The fusion of two hydrogen-2 nuclei to produce helium-3 and one other particle |
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| (ii) | The fusion of hydrogen-1 and carbon-12 into a single particle |
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| (c) | Give two reasons why nuclear fusion is, in principle at least, a better way to generate nuclear power than nuclear fission |
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| (d) | Give two reasons why there are currently no nuclear fusion power stations on earth. |
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